

Arroyo Center

Keeping the Warfighting Edge

*An Empirical Analysis
of Army Officers'
Tactical Expertise*

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Maren Leed

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RAND

Prepared for the
United States Army

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PREFACE

Over the past decade, the U.S. Army has been profoundly affected by changes in military missions, repositioning and reduction of forces, and a heightened pace of deployments. Some observers argue that these changes, in conjunction with normal personnel movement through units, may seriously limit leaders' opportunities to conduct the unit training that is critical to the development of warfighting skills. If this is true, the result could undercut the tactical capabilities of future generations of combat leaders.

Interviews conducted during RAND visits to warfighting brigades indicated that some commanders shared this concern. They attributed it to officers' shorter assignments to key developmental positions and fewer opportunities within those assignments to participate in field training. Others viewed the pace as quick, but they believed their subordinates were being well prepared for future responsibilities.

To address this issue, a RAND Arroyo Center study team analyzed career histories of past and current cohorts of Army combat leaders. In addition, during 1998 and 1999 the team also collected data from and conducted extensive interviews with commanders and staff in most of the combat brigades in the continental United States. This report presents the results for a policy audience. The topic was also the subject of the author's Ph.D. dissertation in the RAND Graduate School.¹

¹Maren Leed, *Keeping the Warfighting Edge: An Empirical Analysis of Army Officers' Tactical Expertise Over the 1990s*, Santa Monica, CA: RAND Graduate School, RGSD-152, 2000. The results are also summarized in a documented briefing, *Keeping the Warfighting Edge*, Santa Monica, CA: RAND, DB-307-A, 2000.

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SUMMARY

Over the past decade, the U.S. Army has been profoundly affected by changes in military missions, repositioning and reduction of forces, and a heightened pace of deployments. This study empirically examined whether these changes, coupled with normal personnel movements through units, have limited the opportunities for Army combat leaders to develop tactical skills. It explored three basic hypotheses: (1) whether the tenure of key developmental assignments became shorter between 1990 and 1998; (2) whether the content² of those assignments also changed in significant ways; and (3) whether earlier shifts in career patterns and training meant recent officers arrived in key positions with less experience than officers in the past.

We find that while some assignments have in fact become shorter, especially for platoon leaders, on average the length of most key jobs in 1998 was about the same as it had been in 1990. Based on primary data we collected from a sample of officers serving in key positions, we find stronger evidence of significant shifts in the content of those assignments. Most notably, in 1998 field assignments for Infantry and Armor officers involved less field training (much less in the case of Armor officers) than they had in 1990. Armor officers also spent much more time deployed to operations and exercises in 1998 than they had earlier; for Infantry officers these deployments appear to have been highest in the mid-1990s, and to have decreased slightly since then. Finally, there did not appear to be substantial changes in

²Throughout this report, the term "content" is used to mean the amount of time spent in various training and deployment activities during unit assignment. This metric of "time spent" does not include any qualitative dimensions; the implications of this limitation are discussed more fully in Appendix B.

the overall career patterns of officers, except again in the case of lieutenants, who showed a rising propensity to serve on staffs at the expense of time as platoon leaders. Taken together, these trends suggest that the tactical foundation of recent Infantry and Armor officers was weaker in 1998 than it had been previously. The effects of this degradation are probably most serious at junior levels, as it suggests a more limited base for them to take forward to all future assignments.

Concurrent with apparent declines in opportunities for tactical development, changes in the national security environment and the Army's resulting efforts to address these changes imply an increase in the scope of tactical skills that are required. We thus posit the existence of a tactical "gap," which, if not addressed, is likely to persist and could even grow larger.

Policy alternatives to increase tactical exposure include efforts either to increase the amount of time officers spend in key positions or to raise the rates at which units train. We do not explore such options in depth here, as a thorough treatment of these alternatives was beyond our study scope. We do, however, identify some steps that can be taken within the parameters of existing personnel and training policies that may increase the levels of tactical expertise for combat officers. These include options to raise the developmental value of already-scheduled training events, and to increase the number of these events for officers as individuals rather than for full units.

We conclude by arguing that the most important action the Army can take to improve the development of its officers, not only tactically but in all areas of leadership skills, is to establish a mechanism to monitor the content of unit assignments. We identify a number of alternatives for collecting relevant data, both from existing sources and from new systems. We conclude that an improved, empirically based system to better understand the developmental opportunities the Army provides, whatever its eventual form, is crucial to ensuring adequate preparation of the officer corps now and in the future.

INTRODUCTION AND OVERVIEW

In recent years, concerns that Army officers are becoming less skilled at their craft have been voiced with growing frequency. A 1997 congressional report, for example, quoted an Army soldier warning that “we are developing a breed of commanders who are less and less experienced at doing their thing than they ever were before” (Spence, 1997, p. 5). The observations of RAND researchers performing Army studies also suggested that this viewpoint was shared by a significant number of officers during the 1990s. If the concerns are true, they imply that today’s officers may be less prepared for warfighting than their predecessors were. Furthermore, given the importance of the transfer of expertise from one generation of officers to the next, a deficiency in experience would probably persist into the future—eating away at the “seed corn” of a competent fighting force for both today and tomorrow. In the course of conducting interviews with unit commanders for an Army-sponsored study on operational tempo (the pace of operations and deployments), we heard such concerns expressed frequently. We therefore conducted an empirical inquiry into the possible erosion of warfighting competency within the officer corps. The results, presented in this report, are intended to help form a foundation for the Army’s future efforts in leader development and to offer useful suggestions for action.

As part of this effort, we conducted interviews with 186 unit commanders and key staff serving in Infantry and Armor¹ field units

¹Throughout this report, any reference to Armor units is intended to include Armored Cavalry units as well. The terms brigade, battalion, and company, when referring to Armor units, also include cavalry regiments, squadrons, and troops.

across the United States, whose insights and perspectives helped refine our hypotheses and interpret the findings. Simultaneously, we collected systematic data from the officers about the time they had spent gaining tactical experience during their careers, and we obtained data from the personnel system describing officer assignment patterns during the 1980s and 1990s. Overall, we found some evidence to confirm that tactical training opportunities declined during the 1990s, although not all the changes were as profound or widespread as some believe.

Our research deliberately focused on officers' *tactical* experience—opportunities they get to practice and apply warfighting skills. These skills, of course, comprise just one part of the desired competencies for Army leaders, and therefore the findings in this report cannot be generalized to inferences about overall Army leadership. Also, our data relate only to Infantry and Armor officers. Although we suspect that many of the trends identified in this research also apply to other officer branches and to noncommissioned officers as well, more extensive data would be needed to confirm that perception. Nevertheless, the research presented here represents a unique source of empirical information about changes in tactical development opportunities since the end of the Gulf War.

The remainder of this chapter reviews some key terms and concepts, followed by a theoretical model that describes how tactical expertise is developed and that leads to the specific hypotheses tested in this research.

TERMS AND CONCEPTS

Key Assignments and Career Patterns

The issues underlying this research are directly related to policy on officer assignments and career patterns. Table 1.1 shows the basic career progression for Army Infantry and Armor officers, listing the assignments and schools at each grade that are required to become “branch-qualified” (BQ), or eligible for promotion. These key positions, not coincidentally, are also those considered to be most useful in terms of teaching officers their craft. We therefore focused on this set of assignments throughout the analysis. •

Table 1.1
Basic Officer Career Patterns

Grade	Years of Service ^a	Key Assignments	Key Assignment Length ^b	Required Schools
Lieutenant	0–4	Platoon leader	12–18 months	Officer Basic Course (OBC)
Captain	4–11	Company command	12–18 months	Captains Career Course
Major	11–16	Battalion/brigade S3/XO	12–18 months	Command and Staff College
Lieutenant Colonel	16–22	Battalion command	24 months	Senior Service School
Colonel	22–30	Brigade command	24 months	

SOURCE: Derived from Army Pamphlet 600-3, *Commissioned Officer Development and Career Management*, Washington, D.C.: U.S. Army, 1 October 1998.

^aThese are "due course" estimates, or the average number of years in service at which an officer becomes eligible for promotion to the next grade. However, at grades above captain a small percentage of officers can be selected either early or within a year or two after first becoming eligible.

^bThese are the average or desired lengths for these assignments; the most promising officers are frequently offered multiple platoon leader, company command, and/or operations officer (S3) or executive officer (XO) positions (multiple battalion and brigade commands are a great deal more rare).

TOE Versus TDA Units

All the assignments in the table can be held in Army units that are known as either TOE (Table of Organization and Equipment) or TDA (Table of Distribution and Allowances). TOE units are those in the "warfighting Army," whose primary focus is to prepare to quickly deploy and fight in the event of a conflict. TDA organizations fill support roles in the "institutional" Army, and they include units that operate Army schools and installations, the Headquarters Army staff, etc. The distinction is particularly important for tactical development, because assignments in the TOE or "field" Army provide most of the opportunities for officers to train and deploy and thus employ their tactical knowledge. Some TDA positions also offer these oppor-

tunities (for example, assignments as tactical instructors or as observer/controllers at the Army's Combat Training Centers), but generally TDA assignments afford fewer chances to practice tactical skills. We therefore focused our analysis on assignments in TOE units, particularly in Infantry and Armor units.

FACTORS AFFECTING TACTICAL EXPERTISE

Our analysis of officer assignments was guided by a theoretical model that integrates existing theories of both expertise and leader development, as illustrated in Figure 1.1.² It posits a set of relationships, first among factors that contribute to the growth of tactical expertise, and second between that expertise and various aspects of effective leadership and leader development.

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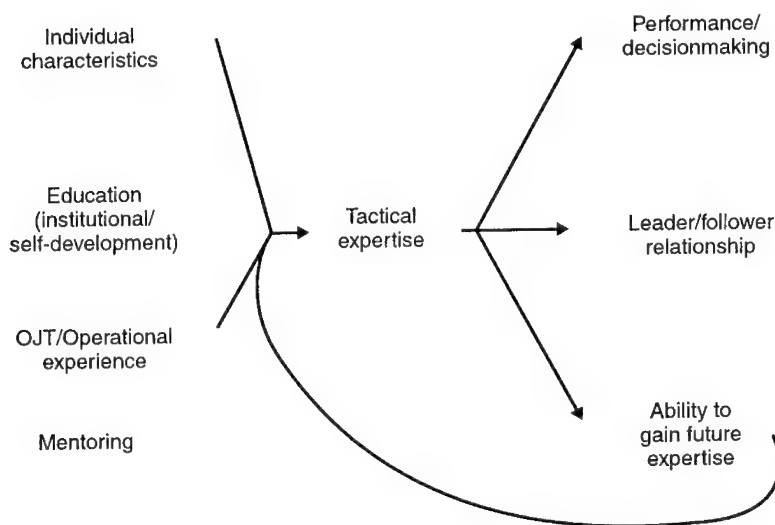


Figure 1.1—Building Tactical Expertise and Its Implications

²The model as described here is linear and cumulative, as are the elements that we attempted to measure in our research. The development of the set of skills being assessed is obviously substantially more complex, involving a number of highly interactive and synergistic forces. For a broader discussion, see Leed (2000).

The left-hand side of Figure 1.1 suggests that tactical expertise is a function of four main factors: individual characteristics plus three "training" mechanisms (education, on-the-job training (OJT), and mentoring).³

Individual Characteristics

It is clear that some individuals possess attributes that facilitate quick comprehension of new material and experiences, and a natural aptitude for synthesizing relevant information. Individual differences in ability clearly affect how quickly expertise is developed, and different types of natural abilities are likely to be desirable in different situations. The Army attempts to ensure that it acquires and retains quality officers first by establishing educational standards, and second through the "sifting mechanism" of promotion and selection boards, which consider supervisors' judgments about the aptitude of their subordinates. Of course, Army procedures also attempt to select officers who have the aptitude to serve in key assignments such as those cited in Table 1.1.

How the Army Develops Expertise

The Army's system for developing leaders largely parallels the theoretical mechanisms listed in the lower left of Figure 1.1. Social science research has identified three principal mechanisms for building knowledge and training leaders: classroom learning, "on-the-job" experience, and mentoring or interpersonal instruction.⁴ The Army uses all these "teaching mechanisms."⁵ The literature suggests that

³Empirical research into expertise is relatively new; there is a much longer historical debate, in the military arena in particular, over whether experts (in this case tactical) are born or made. Current research indicates some support for each perspective; that is, both factors that are innate to the individual and those that are learned appear to contribute to the development of expertise in a given domain (McCall, 1998; Sashkin, 1992).

⁴See, for example, Fiedler (1992), Forsythe (1992), Geier (1992), Lambrecht et al. (1997), Lewis and Jacobs (1992), Marson and Bruff (1992), Sashkin (1992), and Stasz et al. (1993).

⁵Army doctrine departs from this model, however, in two small ways: Mentoring is expected to be incorporated into all activities and thus is not considered a separate developmental forum, and officers are also expected to conduct activities on their own

all three are mutually reinforcing (Blake and Potter, 1992; McCall, 1998) and that the positive effects of any individual method are likely to be buttressed by efforts in other areas.⁶ This synergy results from the fact that each developmental mechanism is useful in strengthening different aspects of an individual's capabilities or approach.

Education: institutional education and self-development. In the area of tactics, education or "book learning" can take two forms: either directed (i.e., in the classroom) or self-guided instruction. Classroom teaching has been found to be best suited to teaching basic concepts (Lewis and Jacobs, 1992; Forsythe, 1992). Courses of instruction in such subjects as how to conduct a passage of lines or a reconnaissance patrol, for example, provide potential commanders with a variety of "tools" to draw upon and a basic set of rules or guidelines to follow when confronted with unfamiliar circumstances. On the self-directed side (emphasized in the Army as "self-development"), studying military history, for example, can expand an officer's understanding of battlefield options and allow for more "visionary" thinking, while simultaneously providing a deeper understanding of tactics and technical issues as well as enhancing professional confidence (Kirkland, 1990).

OJT: operational experience. While education is best suited to the introduction or refinement of options or techniques, "on-the-job" training—the opportunity to learn through experience—has been found to be the most effective way to bring about persistent, profound change. One psychologist has suggested that the opportunity to practice various skills could be thought of as "the successive elimination of errors" (Ohlsson, 1996). Providing a forum for the application of classroom learning to practical problems in the workplace allows people to deepen the understanding and interpretation of new knowledge.⁷ It is also theorized to help build confidence in

("self-development") to complement formal instruction. The Army thus conceives of leader development as a system resting on three "pillars": operational experience, institutional education, and self-development.

⁶The degree to which these can substitute for each other is not known, only that some combination of all the mechanisms appears to engender the most robust results.

⁷For example, in the civilian world, managers report that opportunities to "practice" during different jobs help to develop strategic thinking, ensure results, shift organizational culture, employ empowering behaviors, and strengthen a customer orientation.

handling challenges on a sustained basis (Hamilton, 1990; Geier, 1992). The opportunity to put theory into practice and learn its limitations is critical to establishing a strong basic foundation that can grow, with additional practice, into expertise.

To summarize, it has been suggested that education principally provides information about "what" to do, while experience offers insights into the "how" of getting things accomplished (Dreyfus, 1997). Those in authority need knowledge of both the whats and the hows, but competence in the latter is likely to be more flexible and adaptive over the long term.

Mentoring. The final element of fostering expertise is mentoring. This indirect transfer of experience from one person to another enriches the meaning of situations, broadening the context in which they can be understood (McCall, 1998). The Army recognizes this, and doctrine is explicit about leaders' duty and responsibility to mentor their subordinates.⁸ Officers have repeatedly confirmed the importance and value of mentoring (Jacques et al., 1986; Department of the Army, 1985), but it has long been noted that the level of mentoring that actually takes place is inadequate (Jacques et al., 1986; Kirkland, 1990; Stroup, 1996; Ulmer, 1998).⁹

IMPLICATIONS OF TACTICAL EXPERTISE FOR LEADER DEVELOPMENT

Developing tactical expertise is important for at least three reasons, as depicted in the right-hand side of Figure 1.1. First, expertise affects how well people make decisions, especially under stressful conditions (Fiedler, 1992; Halpin, 1995). Second, tactical expertise has an impact on the relationship between a leader and his followers;

Beth A. Benjamin, "Leadership Development in the Private Sector: Trends, Progress and Speculation," unpublished RAND research, 1997.

⁸See, for example, "Institutional Leader Training and Education," TRADOC Regulation 351-10, 1997; and *Leadership and Command on the Battlefield*, TRADOC Pamphlet 525-100-2, 1993.

⁹Although we did not collect empirical data about mentoring during the course of this research, we did ask in our interviews whether officers believed they were receiving the mentoring they needed, and whether they felt able to mentor as much as they should. In many cases, the answer to both questions was "no."

greater expertise facilitates trust in a commander's judgment, contributing to a more successful leader/follower relationship (Dorfman et al., 1992; Kouzes and Posner, 1996). Finally, to some extent, expertise begets expertise (Anderson, 1987); that is, proficiency allows for the development of increasingly sophisticated mental models and enhances developmental capacity, while novice-level understanding limits the developmental benefit of a given experience. In the Army context, this implies that a strong tactical foundation at the lieutenant or captain level best equips officers to make the most of later opportunities.

TRANSLATING THEORY INTO RESEARCH HYPOTHESES

Potential Effects of Declining Expertise

This basic model suggests that lower levels of tactical expertise—suggested both in our interviews and in recent congressional testimony (Webster, 1999; Casey, 1999)—would have at least four main implications for Army tactical leadership. If expertise had in fact declined, we would expect the following consequences:

- If today's officers should be called upon to fight a war, their tactical decisions would be less reliable, especially at junior levels, than those of the cohort who successfully prosecuted the Gulf War in 1991.
- The ability of current officers to engender the trust of their subordinates, critical in battle, could be more tenuous than it was for officers in similar positions earlier in the decade.
- Officers with lower levels of expertise would probably have derived less tactical benefit from subsequent opportunities than did their predecessors, amplifying the first-hand effects of experience shortfalls.
- Less-proficient officers would not be as prepared to train their subordinates effectively, which could potentially create a "snowball" effect in which each subsequent generation of officers becomes less tactically knowledgeable than the last.

For these reasons, we believed that the possible impact of declining tactical expertise could be quite grave. To evaluate the potential

problem, we set out to gather empirical evidence about whether training opportunities (as an approximation of tactical expertise) have declined over the last decade.

Focus on Training Opportunities

We focused on training opportunities (as opposed to other developmental venues) for three basic reasons. First, this was the area most frequently identified as problematic in our initial interviews with unit commanders. Second, developmental theory¹⁰ suggests that practice by actual application is the most important mechanism for developing tactical expertise; neither formal schooling nor self-development is likely to be an acceptable substitute. Finally, we faced resource constraints that ruled out a broader evaluation of all the factors that help foster tactical expertise.

To collect data from a reasonably sized group in the Army, we selected officers from the Infantry and Armor branches, rather than the whole Army or even all the combat arms branches. This focus was warranted by the high premium on tactical expertise for these officers, given their roles in directing warfighting operations. It also reflected the frequency of the concerns we heard in our initial unit interviews about tactical expertise in Infantry and Armor units.

To evaluate training opportunities, we looked at the two major factors that we believed provided reasonable bounds on those experiences. Our conception was that training opportunities are principally a function of two variables:

- **Assignment length.** Officers have to spend time assigned to units in which hands-on tactical training is most likely to occur—that is, in ground maneuver brigades.¹¹ Their opportunities to practice those skills while in leadership positions are a further function of the time officers spent in key positions, such as

¹⁰For example, Halpin (1995), Lambrecht et al. (1997), Marson and Bruff (1992), McCall (1998), and Stasz et al. (1993).

¹¹These units are also referred to in this report as “warfighting brigades,” and they include all active duty Infantry or Armor brigades in the TOE Army.

commander, executive officer (XO), or operations officer (S3) within those units.

- **Assignment content.** During those key assignments, officers must personally participate in training events that develop warfighting skills. Such activities include, for example, planning and executing field training exercises, simulations, and operational deployments.

Research Hypotheses

Viewing training opportunities as a function of these two variables (key assignments and their content), we explored three basic research hypotheses:

1. The tenure of key assignments (i.e., those thought to be most useful in the development of tactical expertise) got shorter over the 1990s;
2. Within these assignments, there were fewer opportunities to engage in training events than there had been earlier in the decade; and
3. Recent officers arrived in key assignments with less tactical expertise than they would have had in the early 1990s.

To investigate these hypotheses, we analyzed longitudinal data on officer assignments from the Army personnel system and collected extensive data on training experiences from the officers themselves. The next three chapters describe those data sources and present the results of analysis testing each of the three hypotheses in turn.

LENGTH OF KEY ASSIGNMENTS

In our exploratory interviews for this project, officers frequently asserted that the length of key assignments in warfighting units had gotten shorter over the 1990s. Some said that outside pressures (attributed to higher echelons, ranging from the brigade level to the entire institutional Army) were driving the length of branch-qualifying (BQ) assignments for majors, captains, and lieutenants¹ toward or below the minimum bounds set by Army guidelines, a marked change from the past. According to these accounts, shorter assignments were reducing and even precluding officers' participation in key types of training events.

In our comparisons of the length of these assignments in 1990 and 1998, we found empirical support for these assertions at some grades, although not as much as some might expect. The most significant findings were as follows:

- **Platoon leaders.** Officers were spending less time in platoon leader assignments. Further, there are indications that this declining trend will continue.
- **Company commanders.** There had been little change in the average length of company commands.
- **Battalion and brigade officers.** First-time battalion XO's were serving for shorter periods. Perhaps more importantly, however,

¹Again, these jobs are: for lieutenants, platoon leader assignments; for captains, company commands; and for majors, battalion S3 or XO, or brigade S3 or XO assignments. Each is expected to be held for a minimum of 12 months.

fewer battalion S3s and XOs had prior S3 or XO experience to draw upon.

A more detailed explanation of these findings is provided below. First, however, we describe the data and the sample of assignments that we used. We then turn to a description of the changes in assignment length for Infantry and then Armor officers, and we conclude with a synopsis of results.

DESCRIPTION OF THE DATA

To test the hypothesis that key assignments had become shorter over time, we used information contained in the Army's Officer Master File (OMF). Ideally we would have liked to make comparisons among several points over time. But because of the intense effort required to clean and prepare the officer records for analysis, we focused on just two dates, 1990 and 1998. We chose 1990 as the base year for comparison because the officer cohort at that time represented the experience levels of the set of officers who successfully prosecuted the United States' last major war.² We used 1998 because it was the most recent complete calendar year.

Ensuring data accuracy required us to review each record individually, an effort that ultimately limited us to a smaller but robust subset of available records. Our final data set included the assignment histories of officers who had *departed* a key position in an Infantry or Armor unit (i.e., platoon leader, company commander, or battalion or brigade S3, XO, or commander)³ at any point during calendar years 1990 or 1998.⁴ The information about their most recent assignment of one of these types was used to test whether there had been changes in the average lengths of these positions (in this chap-

²In choosing 1990, we also hoped to avoid distortions that may have been caused by the stop-loss policies (where officers were "frozen" in assignments) associated with the Gulf War.

³This list of "key positions" was derived from extensive discussions with subject matter experts both within and outside the Army. Our intent was to capture the positions likely to make the greatest contributions to tactical expertise, while keeping the number of those positions to a manageable minimum.

⁴This subset represented 19 percent of all active duty officers in 1990, and 17 percent in 1998.

ter), while their entire assignment histories were used in the analysis of career patterns, to be discussed in Chapter Four. The unit of analysis for this chapter is a single assignment.

The data presented here do not necessarily indicate *total* lengths of time spent in given positions, because some officers may serve multiple tours in the same type of job. For example, the fact that an officer in 1998 left a company command after 11 months does not mean that he⁵ will have only 11 months total time as a company commander by the time he becomes a battalion S3. However, comparing the lengths of single assignments, when coupled with information about the proportions of officers who hold such jobs once and more than once, allows for an understanding of how much time a given group of officers could reasonably be expected to serve in various positions, as well as how that time is distributed among them.

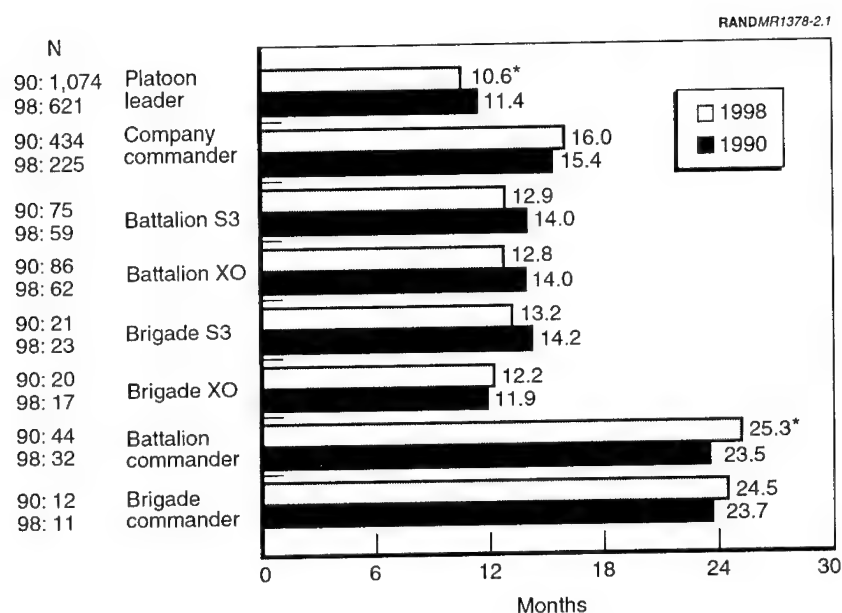
ANALYSIS RESULTS

The hypothesis we tested was whether officers who departed a key job in recent years had less time in that position to derive tactical lessons than did similar officers in 1990—a group we assumed to be tactically sound, as evidenced by their success in the Gulf War. In general, the OMF data did not reveal any pervasive trend toward shorter assignments. However, in some specific positions, we did find that assignments had gotten shorter. The patterns were somewhat different between Infantry officers and Armor officers, so we discuss the two groups separately.

Infantry Officers

Figure 2.1 depicts the average length of key assignments for Infantry officers who left one of these positions in 1990 or 1998. In general, it shows that assignments to senior-level positions got slightly longer, while assignments to mid-grade and junior positions became shorter (with the exception of company commands). Most of the changes

⁵The pronoun “he” is used because all Infantry and Armor officers are male.



*Statistically significant at the $p < 0.1$ level.

Figure 2.1—Average Length of Key Assignments (Infantry Officers)

are very modest. In fact, many of them are small enough to be potentially attributable to random variation (that is, they are not statistically significant).⁶

Particularly notable is the absence of statistically significant declines in the average length of the most recent⁷ company commands. Instead, the length of first-time company commands for Infantry officers actually *increased* between 1990 and 1998, while there was no

⁶Throughout this report, when statistical significance is discussed the hypothesis tested was that the independent variable (year) had no effect on the dependent variable (assignment length, field training content, etc.). Significance was evaluated at the $p < 0.1$ level.

⁷In general, we use the term “most recent” to mean the most recent key assignment that an officer held that ended in either 1990 or 1998 and that therefore caused him to be included in our data set. Again, in some cases this is the second or more time an officer may have held this position.

significant change in the length of second commands. (See Table 2.1.) This is contrary to the beliefs held by some officers in field units, who perceived an increasing occurrence of very short company command tours.

There are at least three possible explanations for this disconnect. First, it may be that conditions were similar in 1990 but the officers commenting on the present were not in a position to observe them at that time (or at least not as broadly). That is, the perception could be based on a change not in reality but in perspective. A second possibility is that while some company commanders in 1998 served less time in that position than had commanders in 1990, others served much longer, so that the average remained roughly constant. However, an examination of the distribution of assignment lengths in both years reveals that for most assignment types there was *less* variance in assignment lengths in 1998 than there had been earlier, making this explanation implausible. Finally, it could be that assignments indeed became shorter, but only as compared with intervening years, which would not be evident from our two data points. We cannot rule out this possibility, although we have found no other evidence to suggest that such a nonlinear change actually occurred.

A somewhat different picture emerges, however, when the results were disaggregated, as shown in Table 2.1. The table distinguishes between officers serving in a position for the first time and those who were serving their second or later tour in a position of the same type; statistically significant differences are shaded.⁸ The final set of columns in the table indicates the percentage of officers in each year who were leaving their second or later assignment of that type, in

⁸When designating repeat assignments, battalion and brigade S3 and XO positions are treated as a group, as all are "branch-qualifying" (BQ) assignments for mid-grade officers. Thus, those serving in their second or more assignment for one of those positions signifies not that they had held the same job earlier (e.g., a battalion XO with an earlier battalion XO assignment), but that the officer had held an earlier BQ assignment that could have been any of the four (e.g., a battalion XO who had previously been a battalion S3). In Tables 2.1 and 2.2, some information for repeat brigade XOs and commanders was not included because they accounted for less than 20 percent of outgoing officers in both years and their results may have differed from those of first brigade XOs and commanders.

Table 2.1
Changes in Assignment Length, Infantry Officers (Months)

Position	Average Length in Position			Average Length, 1st Position			Average Length, 2nd+ Position			Percent Holding Position 2+ Times		
	1990	1998	% Δ	1990	1998	% Δ	1990	1998	% Δ	1990	1998	% Δ
PLT LDR	11.4	10.6	-7.0	12.7	11.4	-10.2	10.2	9.6	-5.9	51.2	46.5	-4.7
CO CDR	15.4	16.0	+4.0	15.7	16.8	+7.0	14.7	14.5	-1.4	30.4	32.0	+1.6
BN S3	14.0	12.9	-7.9	14.2	12.8	-9.9	13.0	14.0	+7.7	16.0	6.8	-13.2
BN XO	14.0	12.8	-8.6	14.5	12.9	-11.0	13.3	12.6	-5.3	46.5	25.8	-20.7
BDE S3	14.2	13.2	-7.0	14.3	17.0	+18.9	14.2	12.2	-14.1	71.4	78.3	+6.9
BDE XO	11.9	12.2	+2.5							93.4	100	+6.6
BN CDR	23.5	25.3	+7.7	24.7	25.1	+1.6	18.5	26.0	+28.8	18.2	12.5	-5.7
BDE CDR	23.7	24.5	3.4									

Shading indicates statistical significance at the $p < 0.1$ level.

order to give some sense of changes in the opportunity for repeat assignments in key positions.

The leftmost set of columns, which parallel Figure 2.1, confirms that there were very few changes between 1990 and 1998 in the average length of key assignments: the only significant changes were the 7.0 percent decrease for platoon leaders (from 11.4 to 10.6 months), and the 7.7 percent increase for battalion commanders (from 23.5 to 25.3 months).

However, looking at the length of *first-time* assignments produces evidence of some significant declines (each about 10 percent) for platoon leaders, battalion S3s, and battalion XOs. In addition, fewer officers had the opportunity to serve in more than one such assignment in these positions, especially at the battalion level. The combined implication of these changes is that officers who left their first of one of these key assignments in 1998 not only had less time in that job, but were also less likely to supplement this experience with an additional assignment of the same type in the future. Thus in 1990,

49 percent of lieutenants spent 12.7 months as platoon leaders, but by 1998, 53 percent led only one platoon for an average of 11.4 months. This suggests that as the 1998 group of platoon leaders advances, a larger proportion of them will have a weaker tactical foundation than had been the case in 1990.

For battalion S3s and XOs, the trends are even more stark. On the positive side, though the average assignment for first-time S3s and XOs fell by about 1.5 months, this still exceeded the 12-month minimum goal by about a month. However, in 1990, 32 percent of all majors leaving one of these jobs had held at least one earlier BQ assignment; by 1998, this had fallen to 17 percent of all outgoing S3s or XOs. That is, one-third of battalion S3s and XOs in 1990 had the opportunity to derive richer tactical lessons from a second BQ position (because of prior BQ knowledge), while only one-sixth in 1998 had this advantage.

This shift has some second-order implications. The most important may be that younger officers in 1998 served in battalions with a less-experienced group of majors overall. This probably affected not only the quality of the tactical coaching, teaching, and mentoring those younger officers received, but also the overall quality of the training events that took place during their tenure. The Army has recently modified its personnel system to address the problem of shorter BQ time for majors; these changes are intended to reverse some of these trends. Nevertheless, for the junior officers who already passed through some of their most important developmental positions under the conditions described here, the experiences they missed cannot be regained.

Armor Officers

As was the case for Infantry officers, in general the length of key assignments for Armor officers increased for more senior positions between 1990 and 1998, and decreased at more junior levels, as shown in Figure 2.2.

None of these differences in overall averages was statistically significant. However, as Table 2.2 shows, the length of first-time platoon leader and battalion XO assignments did fall by a significant amount.

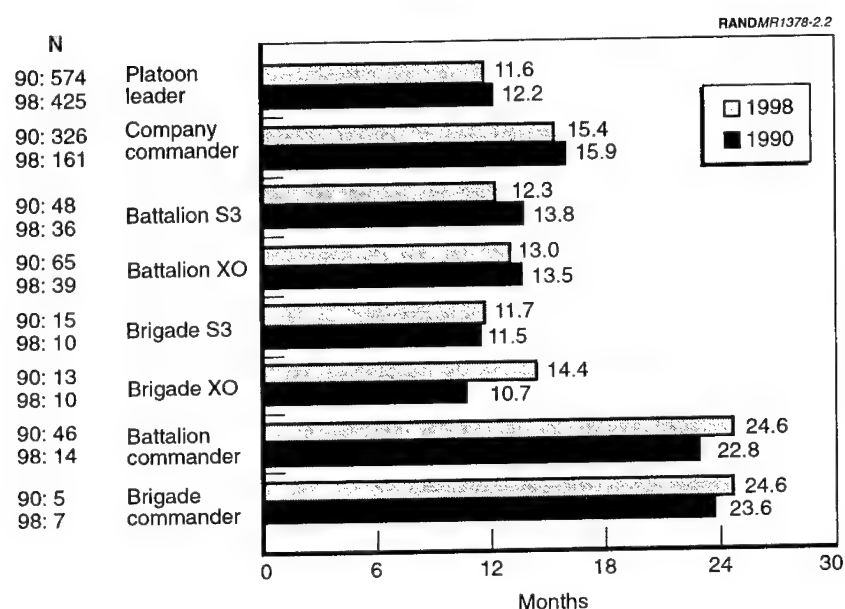


Figure 2.2—Average Length of Key Assignments (Armor Officers)

Of greatest concern is that lieutenants leaving their first platoons in 1998 spent an average of only 10.1 months in those assignments, well below the 12- to 18-month objective set by Army guidelines. And, although opportunities for subsequent platoon leader assignments remained constant between 1990 and 1998, about 55 percent of these lieutenants are not likely to lead another platoon. These trends suggest that future examinations of total platoon leader time would reveal evidence of serious declines.⁹

⁹Falls in time as platoon leaders appear to be recent; as analysis presented more fully in Chapter Five will show, Armor officers leaving their second or more platoon in 1998 had spent about the same amount of total time (just over 23 months) in all of their platoon leader assignments thus far as had similar lieutenants in 1990. This does not necessarily represent a complete picture of platoon leader time, as some may go on to subsequent platoons, but it is rare to lead three or more. Thus declines in total time were not yet obvious in 1998. (While earlier platoon leader assignments for those leaving their second such position in 1998 were on average shorter than they had been in 1990 (13.5 versus 12.1 months), this difference was not statistically significant.)

Table 2.2
Changes in Assignment Length, Armor Officers (Months)

Position	Average Length in Position			Average Length, 1st Position			Average Length, 2nd+ Position			Percent Holding Position 2+ Times		
	1990	1998	% Δ	1990	1998	% Δ	1990	1998	% Δ	1990	1998	% Δ
PLT LDR	12.2	11.6	-4.9	12.3	10.1	-17.9	10.1	10.7	+5.9	44.1	43.3	-0.8
CO CDR	15.8	15.4	-2.5	16.2	16.0	-1.2	14.9	14.1	-5.4	24.5	30.4	+5.9
BN S3	13.8	12.3	-10.9	13.9	12.5	-10.1	13.0	8.0	-38.5	12.5	5.6	-6.9
BN XO	13.5	13.0	-3.7	16.1	13.5	-16.1	11.2	10.7	-4.5	52.3	18.0	-34.3
BDE S3	11.5	11.7	+1.7	9.0	8.5	-5.6	11.8	12.5	+5.9	86.7	80.0	-6.7
BDE XO	10.7	14.4	+34.6							100.0	90.0	-10.0
BN CDR	22.8	24.6	+7.9	23.7	24.8	+4.6	17.6	22.0	+25.0	15.2	7.1	-8.5
BDE CDR	23.6	24.6	+4.2									

Shading indicates statistical significance at the $p < 0.1$ level.

Given current personnel practices, almost all of these lieutenants are likely to be promoted to captain if they remain in the Army, and therefore most will go on to command companies. Developmental theory suggests that they are not likely to derive as much tactical benefit from future commands as earlier cohorts, which had more platoon leader experience to draw upon, because starting with a weaker foundation constrains learning during subsequent assignments. Thus the 1998 group of Armor platoon leaders is probably tactically weaker than were similar officers in 1990, and their deficiencies may not be fully redressed by future opportunities.

First-time battalion XOs in 1998 also served for shorter periods, though again their average tenure exceeded the 12-month minimum target. As with Infantry officers, these first-time BQ officers accounted for a much larger proportion of majors leaving BQ jobs in 1998 than they had in 1990. Over half of all XOs had served in earlier BQ assignments in 1990, compared to just 18 percent in 1998, signifying a sharp decline in the opportunity to serve in repeat BQ positions. Together with battalion S3s, more than one-third of

battalion-level BQ majors had prior BQ experience in 1990; this fell to less than one-eighth by 1998. Again, this suggests not only weaker experience bases for these officers as they progress, but also the potential of lower-quality tactical experiences for the junior officers who served under them in the late 1990s.

TRAINING CONTENT OF KEY ASSIGNMENTS

An officer's opportunity to practice warfighting skills is affected not only by assignment length, but also by the level of training activity in units where he is assigned. This chapter addresses our second research hypothesis: that training activity rates in warfighting brigades fell throughout the 1990s, providing fewer opportunities for officers to enhance their tactical expertise through on-the-job training.

Information about the content of unit assignments is difficult to obtain. The Army maintains scant reliable and centralized information about historical levels of unit training. Thus, we had to collect new data to provide an empirical basis from which to evaluate changes in officers' experience. Based on systematic data we obtained from several hundred officers in key positions, our analysis indicated the following:

- **Declining field training.** Home station field training opportunities in warfighting brigades diminished over the 1990s. These declines were much more substantial for Armor officers than for Infantry officers.
- **Increasing time deployed.** After the Gulf War, assignments involved more time deployed to operations and overseas exercises (although deployments appear to have fallen off again for Infantry officers in the later 1990s).
- **Less maneuver training.** Both Infantry and Armor officers spent much less time in maneuver training. This implies that more recent officers have less knowledge of the challenges associated with unit synchronization than their predecessors.

- **Less training at lower echelons.** Similar reductions occurred in lower-echelon training events. This implies that junior officers have had fewer opportunities to develop tactical initiative and confidence, skills on which the Army places a high premium.

The remainder of this chapter expands upon these findings, after first providing a brief description of the data, the main issues and hypotheses, and the design of our analytic models. The chapter concludes with a discussion of implications of the main findings for officers' opportunities to develop tactical expertise.

DESCRIPTION OF THE DATA

Addressing the question of training experience required information on the content of officers' past and present assignments (i.e., time spent in training events and being deployed). After examining various options, we concluded that the only potential source was the officers themselves. We therefore developed a systematic data-collection form, with the specific intent of minimizing potential distortions that might result from the reliance on individual recall.¹ The form asked officers about the amount of time they had spent participating in various field training and simulation events at home station,² as well as the time they had spent deployed either to operations or other exercises or to the Army's Combat Training Centers (CTCs). We asked for this information not only for current assignments, but for all past assignments in TOE units at brigade level and below.³

¹A copy of the form is included in Appendix A. The sampling procedure and response rates are described in Appendix B. That appendix also discusses the inherent limitations of relying on individual recall, as well as our use of "time spent" as a proxy for developmental opportunity. Despite these concerns, we did not see a viable alternative.

²Home station training as discussed here includes exercises conducted at habitually associated training areas such as Piñon Canyon for units at Fort Carson and the Yakima Training Area for units at Fort Lewis, even though these units must deploy to these locations. Deployments for training purposes include only those events that fell outside of a unit's typical training schedule, e.g., to overseas and/or joint exercises, or to other exceptional events.

³The two exceptions were previous assignments as platoon leaders and company XO's. During pretests, many respondents reported that they could not accurately recall events from so early in their careers (often 10–15 years before).

We requested information from all battalion and brigade XOs, S3s, and commanders, as well as at least one company commander in each battalion, who were assigned in 1998 or 1999 to one of the 23 TOE Infantry or Armor brigades in the continental United States (CONUS). The overall response rate was 65 percent for Infantry officers, and 49 percent for Armor officers.⁴ In addition to officers serving in the positions we targeted, we collected data from 17 other officers who were either attending the Armor and Infantry Pre-Command Courses or serving in other unit staff positions.

Each respondent provided information about activities during his current assignment and all prior assignments to warfighting brigades. Each assignment served as one observation. The final data set included observations about 476 different assignments (316 Infantry and 160 Armor) that began between 1990 and 1998, from 220 different officers (146 Infantry and 74 Armor).⁵

KEY ISSUES AND HYPOTHESES ABOUT UNIT TRAINING

We used these data to address a series of issues that are central to the debate about training opportunity within the Army. Below we de-

⁴Because respondents were asked about all previous assignments in warfighting brigades and there was no apparent pattern of location bias in those assignments, we believe their answers to be representative for all but the most recent years (1997–1998). The most serious concern was a low level of participation at Fort Hood. We were not able to collect any data from the Infantry brigade of the 4th Infantry Division, but because it is engaged in experimentation and thus may not be representative of “normal” unit training patterns, we don’t expect this to have a major effect. Of greater concern was a lack of data from 1st Cavalry, as it was preparing for train-ups for Bosnia. Its lack of participation may therefore mean that average training levels were higher than we report; however, interviews led us to believe that the predeployment training had involved more a change in training focus than a major increase in training levels. Therefore the effect may not be as large as might be imagined. There is some possibility of selection bias, since more senior officers are ones that have continued to be promoted. One would assume that these officers might be those with higher-than-average training levels. There is also, however, a self-selection effect: officers with either very high or very low training levels may have opted to leave the Army on their own.

⁵Note that these data relate to Infantry and Armor *officers*, who were included in our sampling frame because they were assigned to Infantry and Armor units. The branch of the officer and the unit are not always the same. An Armor officer’s assignment in a mechanized infantry unit, for example, is included here as an Armor assignment; the converse would be true for an Infantry officer serving in a Cavalry unit.

scribe these issues and how we translated them into five basic hypotheses about changes in assignment content: (1) field training and simulation; (2) deployments; (3) Combat Training Center experience; (4) live-fire versus maneuver training; and (5) echelons of training.

Field Training and Simulation

One of our main interests was whether we would find empirical support for the frequent assertion that assignments in 1998 involved less time devoted to home station training (both field exercises and simulation) than similar assignments in 1990.⁶ Our first hypothesis was therefore that time spent in home station training had changed, when controlling for position within the unit, branch of the officer, location, and assignment duration.

We specifically emphasized *field training exercises* (FTXs) because they serve as the cornerstone of unit training. Such exercises allow commanders, staffs, and soldiers to operate as they would in various wartime scenarios, practicing how they would work together to accomplish combat missions. Officers engaged in these events, in either staff or command positions, learn valuable lessons not only about how to plan for, employ, and support the assets under their direction, but also how to design a fruitful training event. They must develop strategies to overcome numerous challenges such as equipment failures, personnel problems, inadequate planning, and adverse weather conditions. Exposure to these types of problems, and being engaged in or witnessing solutions, builds officers' repertoires of effective strategies for the future.

Simulation training is also widely used in Army units, but officers' views on its utility as a tool to build tactical expertise are much more varied. Most reservations fall into one of two categories. First, some

⁶We asked about field training in the following categories: gunnery tables, dismounted live-fire (for Infantry units), platoon-, company-, or battalion- or brigade-level field training exercises (FTXs), company-level combined arms live-fire exercises (CALFEXs), battalion- or brigade-level fire control exercises (FCXs), time spent as opposing forces or as an observer/controller (other than at a CTC), and "other" training at the platoon, company, or battalion or brigade level. Simulation categories included SIMNET, JANUS, AETREASS, BBS, division- and corps-level Battle Control and Training Program (BCIP) events, and "other" simulation events.

argue that simulation has the potential to be used improperly (and thus to convey *wrong* tactical lessons, so that the net effect is negative). Second, many fear that simulation, because it is generally cheaper and more efficient, threatens to eventually replace (rather than supplement) field training, if not altogether then to an extent beyond that deemed prudent. Proponents of simulation counter that simulations, when used appropriately, can enhance the tactical benefit of field training by raising entry-level proficiency, make better use of scarce resources, and provide variation in training scenarios and conditions that would be impossible to replicate in field events. Existing research cannot resolve this debate. We did not attempt to make such a judgment here, but we did address simulation training separately.

Deployments

In addition to changes in home station training, many officers we interviewed stated that the deployment content of assignments had changed as well. Although this belief was not universal, it was frequently asserted that deployments to operations or exercises had increased in the years after the Gulf War. There has been a vigorous debate about how some of these deployments (especially those to peace operations) have affected tactical skill-building. On the one hand, some military analysts and practitioners charge that such operations, because they differ in some significant ways from intense combat situations, detract from the warfighting mindset and displace valuable training opportunities (e.g., Rosenberger, 1999). On the other hand, some counter that peace operations incorporate many warfighting skills (Isenhower, 1999), although some may be performed to different standards (Taw et al., 1998), and offer unique opportunities for young officers in particular to exercise leadership, judgment, and responsibility in situations that may become increasingly common.

Some of this difference in opinion stems from the variety of experiences that officers can be exposed to during a given operation. The nature of peace operations can vary substantially, from those that closely approximate combat (e.g., Somalia) to those that are generally more benign (e.g., Multinational Force and Observers in the Sinai). The tactical content of an operation can also depend on the

stage at which a given officer participated: in recent operations, the initial entry phases have tended to be more combat-like, while later phases have been less intense. Tactical benefit is also affected by the degree to which a specific operational mission (apart from that of the overall operation itself) relates to wartime functions.

Despite all these variables, most deployments share at least two features that are important in the construction of tactical skills. First, they offer the opportunity to experience first-hand the challenges of the deployment process and the problems associated with moving units across long distances. Second, they provide exposure to the challenges of sustainment, or ensuring the continued supply and protection of units for periods of time that typically exceed those for home station training events. Overall, even opponents of participation in peace operations are likely to concede that there is at least some useful tactical knowledge gained during the act of deploying and in being deployed for long periods, irrespective of the mission. The real question is, therefore, whether the opportunity cost in terms of home station training that may have been forgone while preparing for, executing, and recovering from a deployment exceeds the potential tactical benefit derived from participating in the operation. Because there is no opportunity for a controlled experiment, the answer to this question will always be subjective. The Army's leadership must therefore decide whether trends in opportunities to develop tactical skills during deployments, and the frequently associated displacement of dedicated home station training, are cause for concern. To provide additional data to inform such judgments and to provide a context for interpreting other changes in training opportunities, our second hypothesis tested whether deployments had increased over the 1990s.⁷

Combat Training Center Experience

Some officers also believed that opportunities to deploy to the Combat Training Centers (CTCs) had declined over time, our third hypothesis. There is much greater consensus about the tactical utility of deployments to CTCs than to other locations. The unique training

⁷Data about deployments also included those for training away from home station.

opportunities at the CTCs teach officers such things as the positioning of units on the battlefield, utilization and refinement of the orders process under high-stress conditions, the effects of extended operations, fire discipline and distribution, and synchronization of fires (U.S. Army Training and Doctrine Command, 1993). Exposure to many of these challenges is not available in any other venue (or at least not to the same degree), so that for many officers CTC rotations are the only opportunity short of war itself to practice some of the crucial aspects of combined arms operations. Features such as a dedicated opposing force (OPFOR), a trained group of observer/controllers, and numerous After Action Reviews contribute to making the CTC experience an important (and, many would argue, imperative) component in the development of tactical expertise.

Live Fire Versus Maneuver

Our fourth and fifth hypotheses dealt with subsets of field training and evolved from more nuanced themes about this training expressed during unit interviews. We explored these distinctions because certain types of field training are intended to convey different lessons. Hypothesis 4 concerned the division of field training time between live-fire and maneuver events. Live-fire events provide officers the opportunity not only to hone the basic skills of their units in weapons employment, but also (and perhaps more importantly) to be exposed to and learn to cope with some of the psychological stresses associated with the use of live ammunition. Maneuver training, on the other hand, focuses on coordinating the use of multiple weapon systems and combat capabilities, while overcoming difficulties posed by terrain and weather. To determine whether the balance between live-fire and maneuver training had changed, we tested both that live-fire training had become less frequent and that time spent in maneuver training had risen.

Echelons of Training

Hypothesis 5 addressed time spent in higher- versus lower-echelon training. Generally, echelon can be thought of as a proxy for which group of commanders and staff are responsible for the planning, development, and execution of an exercise. Lower-echelon (e.g., platoon- and company-level) training generally allows junior officers

more discretion over their own training, fostering their understanding of effective training management and providing opportunities to engage in learning through trial and error. This is not to suggest that all training should be conducted at the small-unit level; there are also valuable lessons embedded in battalion- and brigade-level events, not only for the field-grade officers who design and manage them but for the more junior officers who also participate. These exercises stress the synchronization of many different types of units and weapon systems, challenging commanders and staffs at higher levels. They also require subordinates to coordinate with other units in tight spaces and to utilize (or fail to take advantage of) capabilities to which they are not always exposed. In addition, higher-echelon events can provide opportunities to observe how similar units might cope differently with like challenges.

Our interviewees held mixed perceptions as to how (or if) the echelon of field training events had shifted. Some officers claimed that their subordinates were not spending enough time in platoon- and company-level events and instead were training almost exclusively at higher echelons. This was typically attributed to a rising number of higher-profile large-unit exercises upon which senior officers placed very high priority, which sometimes overrode the training plans of subordinate commanders. Others claimed that conducting battalion- and brigade-level events had become a practical impossibility, and that junior officers were instead being exposed only to training at the small-unit level. Thus the concern about the appropriate balance between lower- and higher-echelon events was shared, but perceptions varied about how it had changed (and whether this was positive or negative). Hypothesis 5 therefore examined whether there had been shifts in the amount of field training time allocated to platoon- and company-level events, or to battalion- and brigade-level exercises.

To summarize, our five basic hypotheses about changes in the content of unit assignments over the 1990s were as follows:

1. Home station training changed
 - A. Less time was spent in field training events
 - B. More time was spent in simulation

2. More time was spent deployed to operations and exercises
3. Less time was spent deployed to the Combat Training Centers
4. Field training time was spent in different kinds of exercises
 - A. Less time was spent in live-fire events
 - B. More time was spent in maneuver events
5. Echelons of field training events shifted
 - A. More/less time was spent in platoon- and company-level events
 - B. More/less time was spent in battalion- and brigade-level events

MODEL STRUCTURE

These five hypotheses involved eight separate types of activities that contribute to the development of tactical expertise: home station field training; home station simulation training; live-fire training; maneuver training; platoon- and company-level training; battalion- and brigade-level training; deployments other than to CTCs; and CTC deployments. We estimated 16 individual regression models that correspond to these eight activity types for the two officer branches (Infantry and Armor).⁸ For each model, the dependent variable was the number of weeks spent engaged in the relevant activity during a given assignment. (In the discussion below, however, the “per assignment” estimates have been converted to an annual average to allow for easier interpretation.) The independent variables included a year-of-assignment variable, dummy variables representing position type and location, and a continuous variable for the number of weeks spent in the assignment.

⁸The full specification and results for each of the 16 models are in Appendix B.

ANALYSIS RESULTS

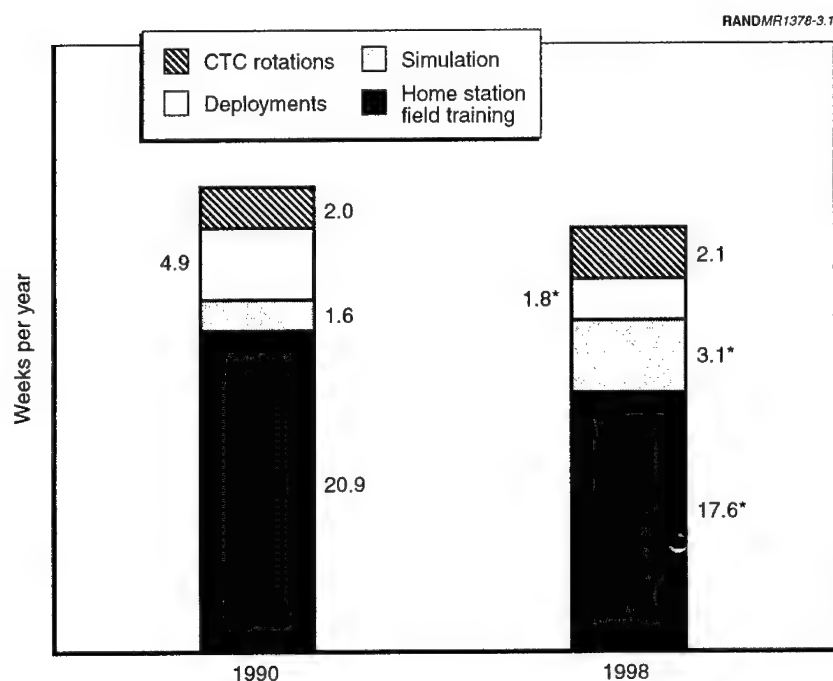
Infantry Training

Figure 3.1 summarizes the basic results for Hypotheses 1, 2, and 3 among Infantry officers, derived from estimating the models just described. The figure shows the estimated average number of weeks per year an average Infantry officer spent participating in home station field and simulation training, deployed for reasons other than to a CTC, or deployed to a CTC. (Hypotheses 4 and 5, because they relate to subsets of field training, are discussed separately below). The bars indicate changes between 1990 and 1998 (except for Infantry deployments, as explained in the figure note); statistically significant differences are indicated with an asterisk in the 1998 portion of the figure.

The figure shows that there were statistically significant changes associated with many of our hypotheses for Infantry officers, although not all of these changes were large in absolute terms. For example, the results indicate that Infantry officers spent less time in field training events over time, although the total reduction between 1990 and 1998 was only about three weeks (20.9 weeks in 1990 versus 17.6 weeks in 1998). And simulation training, though it doubled over the 1990s, still accounted for only a small amount of training time (three weeks in 1998).

Changes in deployments were not entirely consistent with expectations of a continuous rise: non-CTC deployments were highest in the mid-1990s but fell by almost two-thirds by the late 1990s to an average of less than two weeks per year. The reliability of these results in particular is uncertain, however, because of possible biases in our sample.⁹

⁹Data in years prior to 1997 related to activities during assignments at Army installations worldwide, because our sample included officers who had subsequently rotated back to CONUS locations. However, deployments during assignments to overseas posts in 1997 and 1998 were not captured in our data set, because officers in those units were not included in our sampling frame. If deployment rates were higher in those units than they were in CONUS over the entire decade, then our deployment estimates for the late 1990s would underestimate average deployment times across the force.



*Statistically significant at the $p < 0.1$ level.

NOTES: The 4.9 weeks of deployment in the left bar is an estimate related to the period 1994–1995. Earlier deployment levels had been lower, so there was no evidence of a significant linear trend over time. An alternative model structure tested for evidence of nonlinear patterns, specifically whether levels had been low in the early 1990s, higher in the mid-1990s, and then again lower in the later years.

Figure 3.1—Changes in Infantry Training

Figure 3.2 shows results for Hypotheses 4 and 5, disaggregating the key elements of field training. Maneuver training suffered a major drop over this period. The level of maneuver training was estimated at over 16 weeks annually in 1990 for Infantry officers, falling to 12.4 weeks in 1998. Live-fire training changed little over the entire period (although more recently—between the middle and late 1990s—it was estimated to have fallen about 1.5 weeks, a 29 percent decline, also significant).

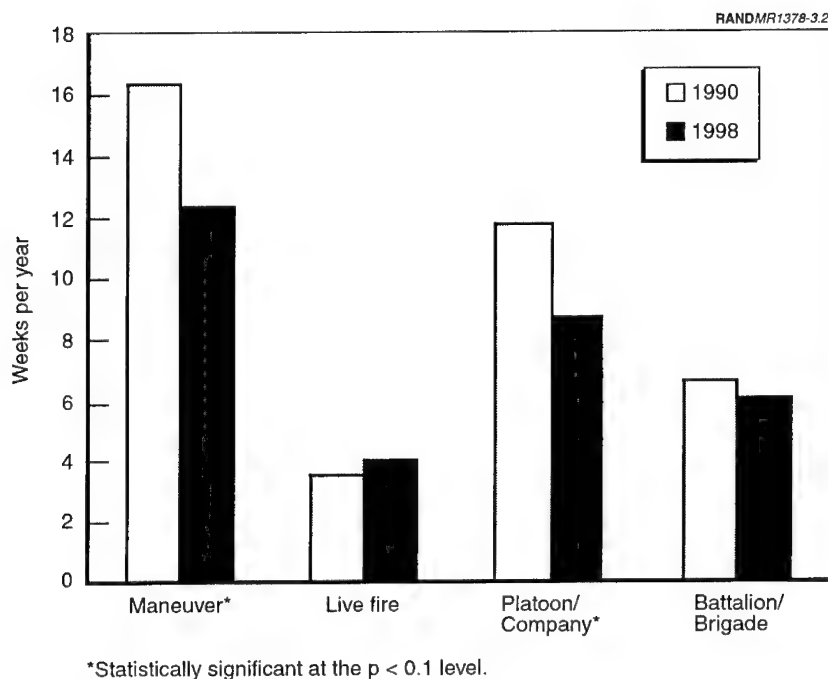


Figure 3.2—Changes in Field Training Elements (Infantry Officers)

The results also showed that declines in Infantry officers' field training time came almost entirely at lower echelons: platoon- and company-level events decreased by 25 percent to a nine-week annual average in 1998; there was no significant change in the amount of time spent in higher-echelon events.

Armor Training

The basic trends for Armor officers, shown in Figure 3.3, conformed more closely to the anecdotes we heard in our interviews. Most notably, there was a large decline in field training: in 1998, an average 12-month assignment was estimated to include only 10.9 weeks in the field, down from almost 20 weeks in 1990. The slight increase in simulation training was not statistically significant, remaining at an annual average of 3 to 4 weeks over the course of the decade.

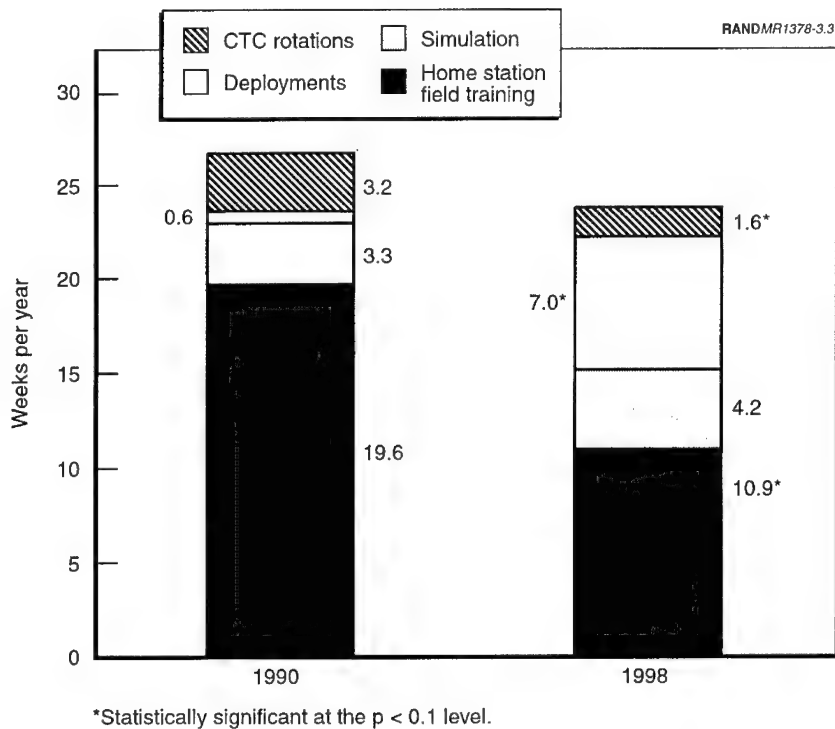


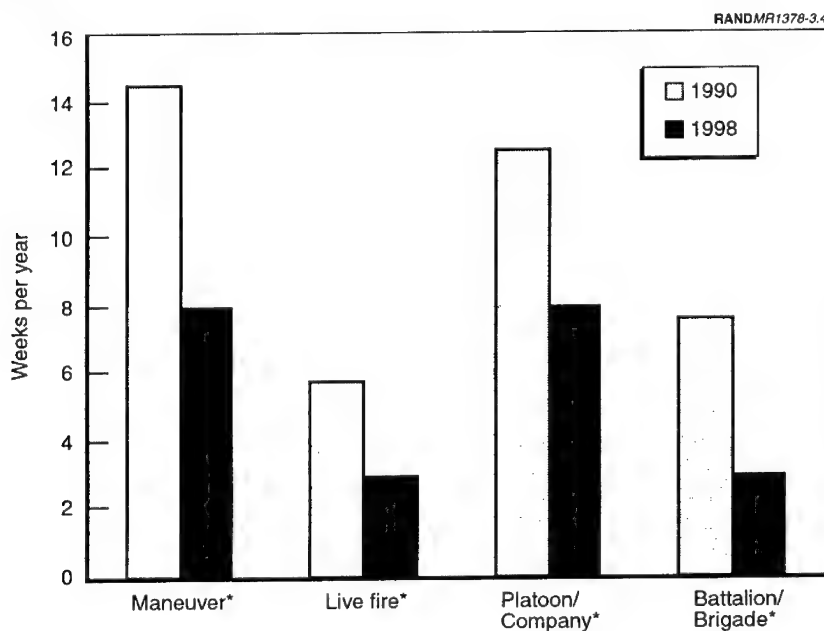
Figure 3.3—Changes in Armor Training

While field training fell, time spent deployed to operations and exercises increased. From a low of under one week per year in 1990, by 1998 the estimated annual average had risen to seven weeks, an increase of almost a week per year. At the same time, time spent at the CTCs fell by half, from an estimated three weeks per year in 1990 to about a week and a half by 1998.

It is worth noting that increased deployments are not necessarily responsible for declines in nor detrimental to tactical exposure. As was discussed earlier, deployments include those for the express purpose of training. Deployments also vary in their tactical relevance. While it is possible that some deployments were less tactically useful than home station field training, our data do not provide sufficient justification for this conclusion. Officers cited numerous

constraints to field training, of which deployments were only one; others included funding, time (even while at home station), and sufficient space. We therefore caution against overinterpretation of our results.

The precipitous reduction in overall field training was reflected in significant decreases in the amount of time spent in both live-fire and maneuver training events, as shown in Figure 3.4. Both types of field training exercises fell by about half over the course of the decade. By 1998, Armor officers were estimated to average just three weeks in live-fire and eight weeks in maneuver training each year. Lower- and higher-echelon field training events also declined significantly, at about the same rate of about four days annually. This led to a total fall of 4.5 weeks in platoon- and company-level training between 1990 and 1998 (a 37 percent decline), and a 61 percent fall in time spent in battalion- and brigade-level events to about 3 weeks annually by 1998.



*Statistically significant at the $p < 0.1$ level.

Figure 3.4—Changes in Field Training Elements (Armor Officers)

Summary of Training Results

Table 3.1 summarizes our basic hypotheses about changes in assignment content and our findings, for both Infantry and Armor officers.

Table 3.1
Summary of Model Results

Hypothesis	Infantry Officers	Armor Officers
1. Home station training changed	True: field training declined over the 1990s while simulation increased	True: field training declined over the 1990s while simulation remained roughly constant
2. More time spent deployed to operations and exercises	Partly false: time spent in these deployments estimated to be lower in the late 1990s than in the mid-1990s	True
3. Less time spent deployed to CTCs	False: no significant change in average time spent at CTCs	True
4. Field training time was spent differently	True: live-fire training declined between the middle and late 1990s, and maneuver training declined throughout the decade	True: both live-fire and maneuver training fell over the 1990s (live-fire training became proportionally larger)
5. Echelons of field training shifted	Partly true: time spent in lower-echelon training declined over the 1990s, participation in battalion- and brigade-level events remained roughly constant	True: both platoon- and company-level and battalion- and brigade-level training fell over the 1990s (small-unit training became proportionally larger)

IMPLICATIONS FOR TACTICAL DEVELOPMENT

What do these changes imply for the development of tactical expertise? The reductions in field training are apt to trouble many leaders, but interpreting them is a matter of judgment. Among other complications, the reductions in field training may be mitigated by the fact that these numbers relate only to training at home station. Some deployments, which are not reflected in the data on home station training, involved or were for the express purpose of conducting field training events. For example, some officers deployed to large-scale exercises in Egypt, Southeast Asia, and Kuwait. Although the officers we interviewed had different views about the quality of such training, most of these exercises took place in large maneuver spaces and involved firing some live ammunition. Thus, even though the quality of these exercises may not have been as high as it would have been had the event been conducted at home station or a local training area, the events probably had at least some tactical benefit. Indeed, some officers we interviewed argued that their deployments provided tactical opportunities superior to what could have been achieved at home station. Other deployments included those to ongoing military operations, which may or may not have involved additional tactical training.

More broadly, it is also important to note that the changes discussed in this chapter do not necessarily signify a problem, merely a departure from earlier levels of training opportunity (and therefore, it is presumed, of resulting expertise). The declines, however, when taken in conjunction with some of the shorter assignments described in Chapter Two, signify an even greater gap than either the length or content of assignments would suggest separately. But to fully appreciate the impact of these changes, one must also view them in light of not only an officer's most recent assignment, which is just one portion of his cumulative knowledge base, but his entire career to date. This issue is the subject of Chapter Four.

**LEVELS OF EXPERTISE AT ENTRY INTO
KEY ASSIGNMENTS**

Our third major research hypothesis addressed the claim that various changes in career patterns had caused officers to arrive in key positions with less experience than officers in the past. Some commanders we interviewed raised two concerns about the consequences of this purported decrease in experience. First, some felt that unit needs were likely to be met less effectively or efficiently. Second, some argued that because these officers were serving in positions that had an impact on the activities and environment in which more junior officers were being trained and developed, the “second generation” was growing up in a less tactically sound environment. As noted earlier, developmental theory suggests yet a third effect: The marginal benefit of a tactically rich assignment is likely to be much smaller for someone whose tactical foundation is already shaky than it would be for an officer who had been better prepared.

To address such issues, this chapter examines empirical data on the career histories of the two officer cohorts (1998 and 1990). These data include all assignments held by each officer. The analyses estimate the total amount of career time spent in key functions that build warfighting expertise, such as service in operational units rather than nonoperational assignments and service in leadership rather than staff positions.

DESCRIPTION OF THE DATA

Our analysis of career patterns relied on the data contained in the Officer Master File, the same information used to analyze assignment lengths in Chapter Two. This effort, however, focused on the

sum total of an officer's assignments up to his exit from a key position in either 1990 or 1998. The unit of analysis, then, was each individual officer (as opposed to individual assignments, as in Chapter Two): each officer's career history was one observation. As before, we included those officers who had left key assignments in 1990 and 1998.

We assessed whether there had been changes between 1990 and 1998 in prior tactical exposure from three different perspectives:

- **Time in units.** We first evaluated the total amount of time that officers had spent in all their unit assignments to date, excluding schools or other breaks in service.
- **TOE versus TDA units.** Of this total unit assignment time, we then compared the average amounts of time spent in TOE units and TDA organizations. This distinction reflects the assumption that TOE assignments involve more tactical training opportunities than do TDA assignments.
- **Leadership versus staff time.** We also divided total assignment time into time spent in "leadership" positions versus time spent on staff. Leadership jobs included platoon leader assignments, and company, battalion, and brigade command; staff assignments were all other positions. Most leadership positions were in TOE units, although some were in TDA organizations; staff assignments were also found in both. The leadership/staff distinction was based on presumed difference in roles, predicated on the assumption that in general, commanding a unit during tactical events is likely to contribute more directly to the construction of tactical leadership skills because of the scope of responsibility than does participation while in a staff position, for which responsibilities tend to be more narrowly focused.

ANALYSIS RESULTS

Tables C.1 and C.2 in Appendix C show the actual numbers that underlie the following discussion, which mentions only the differences that were statistically significant. Overall, there were more changes in the prior career experiences of Infantry officers than for Armor officers, although in general the careers of like officers in 1990

and 1998 were more similar than anecdote had led us to expect. In brief, senior Infantry officers in 1998 had spent more of their careers in TOE unit assignments and less in TDA positions; in contrast, lieutenants spent less time in TOE units and as platoon leaders, while they spent more time in TDA assignments and on staffs.

Platoon Leaders

Infantry: Less unit, TOE, and leadership time. Infantry lieutenants leaving a platoon leader assignment in 1998 had spent less total time in unit assignments than had like officers in 1990. Of this time, more had been spent in TDA organizations, and less in leadership (i.e., platoon leader) assignments.¹ These overall shifts were evident for both first-time and repeat platoon leaders, suggesting that the shifts away from platoon leader to more staff and TDA time occurred sometime between 1990 and 1996 (when the average repeat platoon leader would have entered his first platoon leader assignment), rather than more recently. The increases in time spent on staffs are not necessarily negative in and of themselves from a tactical development perspective; unit staff jobs can expose young officers to how subordinate parts of the unit fit into a larger whole and how resourcing processes work, for example. This information can enrich subsequent platoon leader experiences, and potentially increase the effectiveness of young lieutenants in future assignments.

It is of greater concern, however, when staff time appears to come at the expense of time spent as platoon leaders, especially for those in their first assignments, the lengths of which appear to have become continually shorter over time. (In 1990, the length of Infantry repeat platoon leaders' first platoon leader assignments (which had likely been a few years earlier, in 1987 or 1988) had been 13.5 months; by 1990, first-time platoon leader jobs averaged 13.0 months. Repeat platoon leaders in 1998, who would probably have held their first platoon leader assignments in about 1996, spent 12.4 months in

¹The percentage of first-time platoon leaders who had held staff positions before taking their platoon leader jobs doubled from 9 percent in 1990 to 18 percent in 1998; for repeat platoon leaders, it rose from 29 to 36 percent (both increases were statistically significant). The figures for leadership calculations, by position type, are included in Tables C.3 and C.4 in Appendix C.

those jobs, compared to an average of just 11.4 months by 1998.) Moreover, these lieutenants also saw a decline in opportunity to hold second platoon leader positions (which fell from 51 percent in 1990 to 46 percent in 1998).

These decreases suggest that recent Infantry lieutenants will progress to future assignments with less grounding in fundamental tactical skills. They will have spent less time than their predecessors in the leadership positions that provide opportunities to practice tactical skills, although they may have a greater understanding of broader organizational issues.

Armor: Similar trends, but weaker. These same trends were echoed more weakly for Armor officers, who also had spent more time on staffs and in TDA assignments in 1998 than they had in 1990. These changes were relatively small in actual terms (for staff time, an increase from an average of 1.4 to 3 months, and for TDA time an increase of about a week, on average, to slightly less than a month), but were much larger, given their short careers, in percentage terms (a jump of over 114 percent for staff time, and 50 percent for time in TDA organizations).

This overall average masks some differences between those leaving their first platoons and those with prior platoon leader experience. First-time Armor platoon leaders in 1998 had spent less time in their platoons, and more in staff positions, than had first-time platoon leaders in 1990.² Repeat platoon leaders had also spent significantly more time (two months, on average) in staff positions in 1998 than had like officers earlier, but this was in addition to their time as platoon leaders, which did not change.³

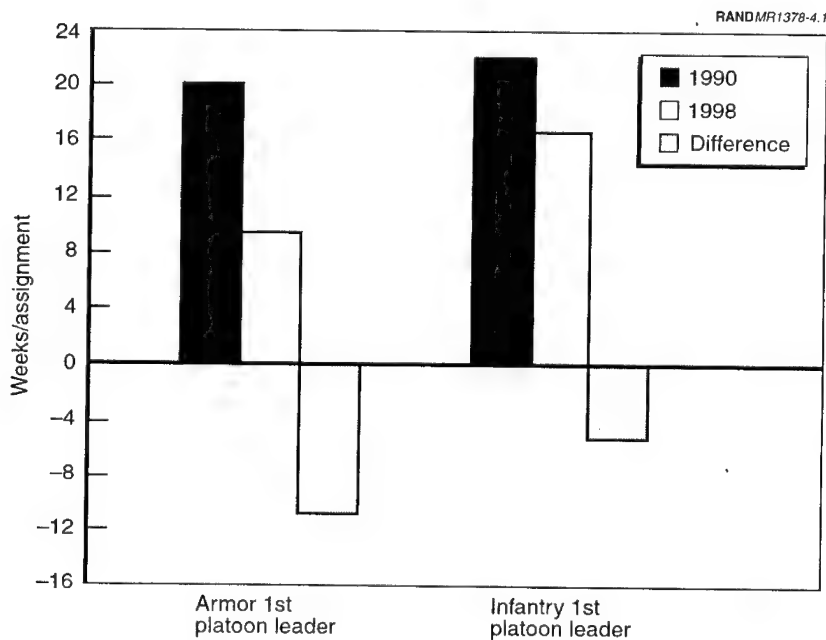
These trends indicate that first-time Armor platoon leaders in 1990 were more likely than their 1998 counterparts to have gone directly into that assignment. In 1998, a much larger proportion of first-time platoon leaders arrived in their units and spent some time on staff

²First-time Armor platoon leaders' time in position dropped between 1990 and 1998 by an average of 1.5 months (11 percent) to just over one year; staff time increased from 0.8 months to 2.5 months, a 213 percent rise.

³Staff time rose 85 percent, from an average of two to almost four months; total time in unit assignments increased by about the same amount, rising 7 percent to an average of 27 months in 1998.

before moving into a platoon leader position (42 percent, versus 9 percent in 1990).

As with Infantry officers, these increases came at the expense of longer platoon leader assignments. That suggests that more recent lieutenants are likely to have had fewer opportunities to build their tactical knowledge while serving as unit leaders. When coupled with the declines in unit training levels over the 1990s (especially large for Armor officers), decreases in tactical exposure for recent young officers are likely to be even more pronounced. Thus, the tactical foundation of the most recent lieutenants is less robust than was the case for platoon leaders earlier in the decade. Figure 4.1 shows the combined effects of shorter assignments and lower field training rates on the exposure to field training for first-time platoon leaders (both Infantry and Armor) in 1990 and 1998.



All statistically significant at the $p < 0.1$ level.

Figure 4.1—Differences in Total Field Training, First-Time Platoon Leaders (Artillery and Infantry Officers), 1990–1998

Company Commanders

No major change. Contrary to perceptions of lesser experience expressed by some of the officers we interviewed, both Infantry and Armor company commanders in 1998 had spent more time in TOE units and more time in leadership positions than had earlier commanders.⁴ This suggests that they were likely to have had more opportunities to participate in tactical training events than had like commanders in 1990. This advantage is again mitigated by the declines in unit training discussed in Chapter Three. However, for Infantry officers the training decreases were small enough that the net change in exposure was probably negligible, or even slightly positive. But increased time in TOE and leadership positions are unlikely to have completely outweighed less frequent unit training for Armor captains, who probably experienced some declines in their tactical base relative to like company commanders in 1990.

Key Battalion and Brigade Staff Positions

No evidence of increased TDA burden. Many in the Army believe that recent years have seen a steep increase in TDA requirements for branch-qualified captains (i.e., those who have already served as company commanders). Captains who have finished company command, for example, are often tapped for service as Reserve Component advisors or in recruiting and school positions.

We therefore expected that the career patterns for majors who left a battalion or brigade XO or S3 assignment in 1998 would differ substantially from those of similar officers in 1990, because more recent officers would have been more likely to have spent time in TDA assignments after leaving company command.

However, the Army data did not support these expectations. In fact, there were no significant changes in the career histories of Armor officers at all, save a decline in total time spent in all assignments.

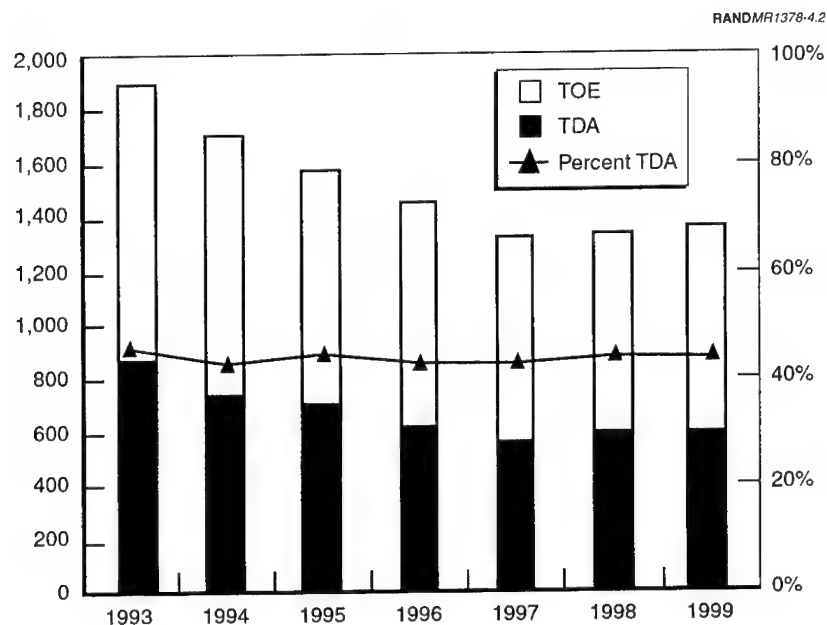
⁴On average, outgoing Infantry company commanders saw their TOE time increase by over four months (6.5 percent) between 1990 and 1998; TOE time for Armor officers rose by almost three months (4.1 percent) over the same period. Leadership time rose by over three months for both Infantry and Armor company commanders (an 8.0 percent increase for Infantry, 8.5 percent for Armor).

Infantry majors leaving each of the four key staff positions (battalion or brigade S3 or XO) in 1998 had spent significantly *less* time in TDA assignments than had like officers in 1990.

There are a number of possible explanations for why we may not have observed the expected increases in the amount of time these officers had spent in TDA organizations. One is that the major effects of the purported increases in TDA demand may not have occurred until after the group of officers who entered an S3 or XO position in 1996 or 1997 (and thus exited in 1998) would have been eligible to serve in those types of assignments. It is also possible that the TDA burden, after accounting for other changes in force structure, manning, etc., either has not shifted substantially or has had any increases borne principally by officers who did not later go to an XO or S3 assignment in an Armor or Infantry unit. Our data did not allow us to examine whether the anticipated rises in time spent in TDA positions might be apparent in later cohorts of officers, nor could we assess whether officers who served in TDA positions were more likely to leave the Army or to divert from a career path that might take them back to an S3 or XO position in a warfighting brigade. However, we were able to obtain some information on the percentage of captains over time who were assigned to TDA organizations at given points in time, which is shown in Figure 4.2.⁵

Contrary to widespread belief in the Army, it does not appear that the relative burden of TDA assignments has increased, at least since 1993 (the earliest year for which data were available). The most plausible explanation for this misconception may be that perceptions of greater demand for branch-qualified (BQ) captains are based on a *shift* in how those positions are allocated, rather than on a rise in the overall level. The number of authorized positions for BQ captains far exceeds the supply, and has for a number of years. Because not all positions can be filled, the Army's Personnel Command must generate a prioritized plan to distribute the available post-command cap-

⁵These data reflect the total number of captains, on September 30 of each year, who on that date were *assigned* to either a TOE or TDA organization. The data were drawn from the Officer Master File, and they are believed to be imperfect but presumably in ways that are assumed to occur in roughly equal proportions in each year. Thus while the data may be imprecise in their estimates of total numbers, proportional comparisons should be valid. Data for Armor officers, while not shown, are almost identical.



NOTE: Data provided by Army Personnel Command (PERSCOM).

Figure 4.2—Percentage of Captains in TDA Assignments (Infantry Officers)

tains across those authorized positions. Some of the more recent TDA requirements, such as support to Reserve Components, are mandated by Congress and must be manned at 100 percent of the authorizations. Thus it may be that while the overall percentage of TDA assignments has remained constant over the 1990s, an increasing proportion of those assignments has been allocated to Recruiting Command or the Reserve Components, for example, while fewer have been to TDA organizations that traditionally received a higher percentage (e.g., Active Army support command staffs). Unfortunately, the data do not allow us to reliably identify the types of TDA organizations to which officers were assigned; the possibility of a shift among types of TDA assignments rather than an increase in the total level, however, does account for (what would be accurate) perceptions of rising demands in some areas. Nevertheless, the fact remains that the average officer who left a battalion XO or S3 posi-

tion in a TOE Armor or Infantry unit in 1998 had *not* spent significantly more time in TDA assignments than had like officers in 1990, and Infantry officers had in fact spent less.

Infantry trends. Infantry battalion and brigade S3s in 1998 had also spent significantly more time in TOE assignments. Developmentally, this rise means that more recent officers were likely to have had more opportunities to engage in tactical exercises in their prior assignments than had earlier S3s;⁶ the average increase in TOE time of over 10 months for battalion S3s and almost 15 months for brigade S3s should have more than compensated for the declines in field training that occurred over the 1990s.

Infantry battalion XOs in 1998 had spent less total time in unit assignments, specifically in TDA and staff positions. Despite equal amounts of TOE and leadership time, decreases in unit training levels might suggest less cumulative tactical exposure. However, the effect of declines in the tactical content of TOE assignments is likely to be less serious for more senior officers than junior ones. At this level, majors were probably platoon leaders and company commanders in the late 1980s and early 1990s, when training levels were high. If a firm tactical foundation resulted, later shortfalls are likely to have less effect on the continued development of these officers. No change in brigade XOs TOE or leadership time between 1990 and 1998 is therefore likely to have a small effect, assuming that most of their time as lieutenants and captains was spent in a richer tactical environment (a likely circumstance in the early to middle 1980s).⁷

Armor trends. For Armor officers, the magnitude of training decreases, when coupled with fewer opportunities to serve in multiple BQ assignments as majors, may have weakened recent battalion S3s' and XOs' understanding of higher-echelon operations in particular. This could have some negative effect on their future ability to effectively command at the battalion and brigade levels. Lower unit

⁶However, their experiences *while serving* as battalion S3s were less tactically intense.

⁷We do not have information on the training levels in the mid-1980s. However, officers we interviewed at this level were fairly consistent in characterizing their training exposure when junior officers as intense and demanding. If these recollections are accurate, this suggests that a strong tactical foundation would have been laid for these officers, which would have prepared them to maximize the tactical benefit from more meager opportunities later in their careers.

training rates also suggest fewer opportunities for tactical exposure while serving in battalion and brigade S3 or XO jobs, but again the probability of a firm foundation established as lieutenants and captains in the late 1980s or early 1990s could be expected to have blunted some of the negative impact this would have on the tactical proficiency of more senior officers in particular.

Battalion and Brigade Commanders

Battalion commanders. Overall, Infantry battalion commanders in 1998 had spent about 14 months less time in unit assignments than had commanders in 1990. However, later commanders had spent over 12 months more time in TOE unit assignments, and nine months more, on average, in leadership (platoon leader, company, and battalion command) positions. The increases in TOE and leadership time suggest greater exposure to tactical events, which, though partially offset by declines in unit training, should still have resulted in more tactical “practice” over their careers as a whole for recent battalion commanders than was the case for outgoing commanders in 1990.

Armor battalion commanders in 1998 had spent 22 months more time in TOE unit positions than had outgoing commanders in 1990, a rise offset by a 28-month decline in time spent in TDA assignments. The addition of two years of greater exposure to training events should have increased tactical opportunities, although whether this sufficiently compensated for declines in unit training depends on when those TOE assignments took place and unit activity levels at the time. In general, however, it seems unlikely that the level of tactical exposure would have fallen substantially for Armor battalion commanders between 1990 and 1998, and it may well have increased.

Brigade commanders. At the brigade level, the only significant difference between Infantry brigade commanders in 1998 and those in 1990 was a shift of about 40 months spent in TOE rather than in TDA assignments. The presumed large resulting increase in training exposure is likely to have provided many more opportunities to practice tactical skills, despite small declines over time in unit training levels. There were no significant changes in the career histories of Armor brigade commanders. Whether declines over the 1990s in

training exposure are likely to have had a major effect on the tactical expertise of these officers depends on whether these officers had a firm grounding in tactics during their early assignments (i.e., as platoon leaders and company commanders), which would have been in the early to middle 1980s and about which we have no data. The training declines over the 1990s documented here probably reduced the amount of practice they were able to engage in as brigade commanders relative to their peers in 1990, although our sample does not give enough statistical power to be certain. Overall, then, any tactical deficiencies for Armor brigade commanders, relative to like officers in 1990, are likely to be at higher echelons (i.e., in their comfort with and practice in large unit movements); given slightly longer command tours at this level, however, training rates may still have been adequate to meet their tactical developmental needs.

These results, taken together, suggest that while senior officers have fared reasonably well, more junior officers have experienced declining opportunities for tactical training in recent years. These decreases in tactical exposure for young officers may essentially be a *fait accompli*, though in Chapter Five we discuss some possible interventions to try to offset some of the probable deficiencies. Chapter Five also explores possible policy options to increase tactical opportunities for future officers more generally, and it recommends establishing a more robust system for monitoring these opportunities.

CONCLUSIONS AND POLICY OPTIONS

SYNTHESIS OF ANALYSIS RESULTS

The analyses in the previous three chapters leave little doubt that opportunities for tactical training have declined for recent cohorts of Army officers. Although we did not find evidence for all of the expected changes, in general this evidence supports many of the anecdotal concerns about declining expertise. To summarize, Table 5.1 reviews the primary findings for each of the three hypotheses posed at the outset of this research.

Table 5.1
Summary of Primary Research Findings

Research Hypothesis	Infantry Officers	Armor Officers
1. Tenure of key assignments is shorter	True for platoon leaders overall (especially first-time platoon leaders), majors in their first BQ positions	True for first-time platoon leaders, battalion XOs
2. Training content of key warfighting assignments has declined	True: 12-month assignment in 1998 estimated to have involved three weeks less field training than it did in 1990	True: 12-month assignment in 1998 estimated to have involved nine weeks less field training than it did in 1990
3. Officers are arriving in key assignments with less tactical exposure	True for platoon leaders, false for company commanders	True for platoon leaders, false for company commanders

Table 5.2 summarizes the “bottom line” in terms of the likely effects of these changes on the tactical expertise of Infantry officers. Table 5.3, which follows, presents the same information for Armor officers. Both show that the largest departures from earlier levels of tactical proficiency are likely to be for lieutenants.

IS THERE A PROBLEM?

Before discussing possible policy steps to increase levels of tactical expertise, we need to address more directly the question of whether officers’ levels of tactical exposure are “enough” to meet tactical requirements. Although there will always be a subjective element in such a judgment, we conclude that a problem in fact exists, and that it warrants remedial actions.

Changes in Requirements for Military Skills

The principal aim of our research was to quantify changes over the 1990s in the “supply” of tactical opportunity—that is, in the level of tactical exposure. Our analysis assumes that tactical “supply” in 1990 was adequate to meet tactical needs at that time, as evidenced by the successful prosecution of the Gulf War. Since then, various changes in the international security environment and the Army’s efforts to address them have resulted in some of the shifts in tactical supply documented earlier.

Though beyond the scope of this research, it seems reasonable to conclude that these changes have also had an impact on tactical “demand,” or the scope of skills that are now required. The military now faces a broader and more complex set of missions than it did a decade ago, missions that must be prosecuted with fewer forces and exercising different concepts of operations. These developments have expanded the requisite set of skills that officers must now possess.

For example, the most recent Army vision statement stresses the need for forces to be able to operate across the “entire spectrum” of conflict, a departure from the focus on a large, conventional battle across the fields of Europe that dominated throughout much of the

Table 5.2
Net Effects of Changes in Assignment Lengths and Content on Tactical Expertise (Infantry Officers)

Position	Length of Most Recent Assignment	Tactical Content of Most Recent Assignment	Time Spent in Prior Assignments	Tactical Content of Prior Assignments	Likely Net Effect on Tactical Expertise
Platoon leader	First-time assignments shorter, fewer repeat assignments	Slightly down	Less time overall, less time in TOE/ platoon leader positions, more in TDA/STF	Probably less	Down, especially for first-time platoon leaders
Company commander	Longer for first-time commanders	Slightly down	More time overall; first-time commanders had more time in TOE/ platoon leader positions	More platoon leader time when training levels higher; lieutenant foundation probably more sound	Longer assignments likely make up for much of training shortfall, no major difference
Battalion S3/XO	Shorter for first-timers, decreased opportunity for repeat BQ assignments	Slightly down	More TOE, less TDA time for S3s; XOs had less total time, less on STFs/TDA	For S3s, more TOE time likely compensates for training decreases; no major changes for XOs	Foundations likely sound, less exposure to tactical lessons in recent BQ jobs likely weakened knowledge of battalion/brigade operations
Brigade S3/XO	No significant change	Field training slightly down; no change in higher-echelon events	S3s had more TOE time, less TDA; XOs had less total time, less TDA	For S3s, more TOE time likely compensates for training decreases; no major changes for XOs	Foundations likely sound, S3s maybe better
Battalion commander	Longer second commands	Field training slightly down; no change in higher-echelon events	Less time overall, more TOE/leadership time, less STF/TDA	Probable increase in overall training exposure, despite recent training decreases	Probably better
Brigade commander	No significant change	Field training slightly down; no change in higher-echelon events	More TOE time, less TDA	Probable increase in overall training exposure	Probably better

Table 5.3
Net Effects of Changes in Assignment Lengths and Content on Tactical Expertise (Armor Officers)

Position	Length of Most Recent Assignment	Tactical Content of Most Recent Assignment	Time Spent in Prior Assignments	Tactical Content of Prior Assignments	Likely Net Effect on Tactical Expertise
Platoon leader	Shorter for first-time platoon leaders	Down	More STF/TDA time (less platoon leader for first-timers, more total time for repeat platoon leaders)	Down	Down, especially for first-time platoon leaders
Company commander	No significant change	Down	More TOE time, more time in earlier platoon leader assignments	More platoon leader time probably offset some portion of training declines	Training declines likely to have weakened tactical foundation
Battalion S3/XO	Shorter for first-timers, decreased opportunity for repeat BQ assignments	Down	No significant change	Training declines not likely to have had major effect on earlier TOE/ leadership experiences	Foundations probably sound, less exposure to tactical lessons in recent BQ jobs likely to have weakened knowledge of battalion/brigade operations
Brigade S3/XO	No significant change	Down, including less higher-echelon training	No change for S3s; XOs had more TOE, less TDA	For S3s, no major change; more TOE time for XOs (probably earlier in decade, so likely to have increased exposure)	No major change for S3s; XOs probably better off, but less familiarity with higher-echelon operations
Battalion commander	No significant change	Down, including less higher-echelon training	More TOE time, less TDA	Probable increase in overall training exposure	Foundation probably better, less exposure to higher-echelon training as commander
Brigade commander	No significant change	Down, including less higher-echelon training	More TOE time, less TDA	Probable increase in overall training exposure	Foundation probably better, less exposure to higher-echelon training as commander

Cold War.¹ Many of these missions imply new tactics, and even those that are shared need to be exercised under a more diverse set of conditions or to different standards.

At the same time, the conception of the warfighting mission along that spectrum has come to encompass a more diverse set of threats, such as cyberattack, bioterrorism, and other asymmetric strategies.² Thus combat has become more complex; force employment and battlefield operations are greatly complicated when civilians and combatants are indistinguishable, when technologies are rendered moot by enemy attack, or when chemical or biological weapons have been introduced. These challenges imply that officers in the future will require more creativity and a more diverse set of tactical options (Halpin, 1995), and a greater ability to “adapt to the unexpected” (Hickling, 1998:45). Further, the need for independent judgments is being pushed to lower levels of command (Bass, 1997): one Australian general wrote that tactical decisions with wide strategic implications made by junior commanders constitute one of the “fundamentals” of future warfare (Sanderson, 1998:5). These phenomena are already quite visible in the case of recent peace operations, such as Bosnia and Kosovo.

Such trends indicate that officers in the 21st century will need a more expansive set of tactical skills than their predecessors. It appears, therefore, that the need for tactical proficiency has risen, while opportunities for tactical training have declined, giving rise to a tactical “gap.” The negative trends in tactical supply at the most junior levels further imply that this gap is likely to continue and perhaps widen in the absence of intervention.

Quality of Training

Have other factors compensated for the apparent gap? Some argue that growing tactical requirements can be met, despite less time spent in training events, because the *quality* of training has im-

¹The Army has performed missions across this spectrum throughout its history, but has traditionally viewed them as “lesser-included cases” (Taw et al., 1998).

²See Joint Chiefs of Staff, *Joint Vision 2010*, available on the World Wide Web at <http://www.dtic.mil/jv2010/jv2010.pdf>, p. 11.

proved. This thesis was advanced in some of our interviews, and it has been echoed in the writings of senior Army officers (e.g., Reimer, 1996; Dubik, 1998).

There is general agreement that the training *process* is superior to what it once was. Nevertheless, the officers we spoke with also related a number of intervening situational factors that they believed negatively affected training quality. For example, many believe that less-experienced officers are now managing and directing training events—a problem evident in our earlier analyses showing decreases in branch-qualifying time for majors and a greater propensity for lieutenants to serve in staff positions. Some also cite a “compression” of the training cycle. They perceive that the same number of events are being conducted within shorter periods of time, forcing units to jump from one exercise to the next without sufficient time to properly prepare and without time to recover, retrain, and internalize lessons derived from the earlier event. Others cite the perennially high levels of enlisted turnover,³ which reportedly force some units to “spend more time on the basics, so that the ultimate level that is reached is lower than it used to be.”⁴ These negatives must be weighed against putative improvements in training process.

Our conclusion, based on a review of the literature and on extensive interviews in field units, is that while training improvements have probably resulted in training that is more developmentally potent, unit circumstances have in many cases diminished this positive effect. Therefore, gains in quality have probably not compensated for some of the large declines in training opportunities. Given that skill requirements are ratcheting upward, this conclusion seems even more likely.

In sum, if exposure levels in 1990 were about adequate to meet tactical needs at that time, then recent declines in tactical opportunities

³The argument that the rates at which soldiers moved through jobs have increased over time was not uncommon in our interviews, but it is inconsistent with the empirical evidence. Analysis shows that enlisted turbulence has remained at about the same level over most of the 1990s, apart from some disturbances stemming from policies put in place for Operation Desert Storm/Shield (Hix et al., 1998:11). So although turnover probably does have an adverse effect on training quality, it does not appear that this problem has worsened in recent years.

⁴Infantry brigade XO, interview with the author, May 19, 1999.

give reason for concern. Below we suggest various options that the Army could consider to alleviate these strains.

OPTIONS TO INCREASE TACTICAL EXPERTISE

The Army has two obvious policy levers for increasing expertise: lengthening the tenure of key assignments, or raising the rates at which units train. However, significant uncertainty in both the personnel and training policy domains may mean that other options to address leader development goals may be preferable, at least in the short term. This uncertainty stems from the complex set of factors that affect assignment lengths and unit training rates.

For example, if the Army decided to try to increase the length of company commands, this could further exacerbate current shortfalls in other parts of the Army that require the expertise of branch-qualified captains. Further, if officers are then forced to wait longer to take command, it may have an impact on their decisions whether to stay in the Army and cause a decrease in retention rates. It is also possible that longer commands could act as a positive incentive and increase retention rates, but we doubt those effects could be anticipated accurately.

On the training side, depending on how changes were implemented, an effort to increase training rates could have the effect of increasing the stress that current officers reported to us in our interviews, encouraging officer departures. This too could have the opposite effect, though, if officers viewed such an initiative as a welcome reemphasis of their warfighting purpose. Again, predicting the net effect would be a complicated proposition, and errors have the potential to be very disruptive.

These interrelationships among such wide and diverse policy objectives and outcomes mean that developmentally motivated policy interventions could (a) have unintended (and potentially adverse) consequences in other areas, and/or (b) fail because other parts of the system are in flux. This latter point may be the more relevant concern. Numerous actions have been taken lately in the realms of personnel, training, and force structure that could have a significant impact on both tour lengths and unit training rates; however, it is too early to judge the long-term impact of these changes on develop-

mental opportunities.⁵ Identifying relevant and appropriate policy targets in the face of such uncertainty would be a significant challenge.

Another impediment is the sheer size of changes that would be needed to solve the problem by “brute force”—i.e., by increasing assignment lengths or raising training rates. In the case of Armor officers, training rates have declined so much that reaching prior levels of exposure without increasing training could mean almost *doubling* the length of some key assignments. Alternatively, if personnel constraints limit flexibility in assignment tenure, units would have to increase their training levels by almost 100 percent to reach past levels. Some combination of longer assignments and more training could also increase tactical exposure, but such sizable changes probably could not be justified solely on the basis of leader development concerns.

Given the additional level of effort required to conduct a serious analysis of more profound, long-term policy options, we instead aimed to identify short-term but promising possibilities within the bounds of existing personnel and training practices. Options include improving the developmental quality of existing events, and increasing tactical opportunities for individual officers rather than entire units.

Improving Developmental Quality

Any initiatives to improve training quality must be balanced against the Army's cultural tradition of allowing commanders to execute a general training intent as they see fit. But even within the limitations implied by this tradition,⁶ there are some options available to en-

⁵For example, the Army has instituted a new Officer Personnel Management System that changes career paths for field-grade officers; announced plans to match officer inventories with requirements; and moved to shift personnel to achieve 100 percent fill in TOE units.

⁶The value of empowerment, which is embedded in the policy of giving subordinate commanders training intent but allowing them to develop a plan of execution, has been emphasized repeatedly in the leadership literature. See Bass (1997), Campbell (1992), Harback (1993), Kirkland (1990), Malone (1992), Stewart (1992), and Taylor and Rosenbach (1996), among others.

hance the developmental value of existing events. These include the following:

- **Strengthening officers' understanding of and ability to effectively employ mentoring and coaching.** This could be accomplished with more directed instruction at schools and precommand courses, and by integrating a review of officers' efforts in After Action Reviews (AARs) conducted in home station training events and at CTCs. A more aggressive option would be to send Mobile Training Teams of experts to conduct applied instruction in maximizing mentoring opportunities at home station.
- **Re-emphasizing the preparation and assessment phases of training.** In our interviews we heard repeatedly that time constraints are forcing some units to focus almost exclusively on the execution of training events, and that they do not have the time to adequately prepare for, recover from, and integrate lessons from each exercise. Fully addressing this problem may require alleviating time constraints through concerted efforts from senior commanders, as well as by increasing funding for programs that would reduce training distracters. If such relief is not forthcoming, commanders may need to adopt unorthodox methods to derive more developmental quality out of their current cycles. This means that even if the entire unit does not have time to go through the preparation cycle (or perhaps not as thoroughly as it should), commanders could ensure that this opportunity is provided to junior officers and other unit leaders, to protect the long-term integrity of the training management system. For example, sending junior officers out for terrain walks with a senior NCO (noncommissioned officer) or other experienced officer if the commander is not available, while not ideal, at least increases the possibility that young officers will derive more value from the event than they might have otherwise, and gets them thinking beyond their existing conceptual bounds. More important, it ensures that junior leaders, who will be the trainers of tomorrow, know how things *should* be done, even if the current environment does not allow for ideal execution.

Increasing Opportunities for Individual Officers

Irrespective of any other efforts to raise the rates at which *units* train, it may still be possible for commanders to increase individual officers' exposure to tactical events. This may require subjecting current practices to certain departures, the feasibility of which would have to be assessed in greater detail. Priority for such opportunities should probably be given to junior leaders, since establishing a firm tactical foundation is the most robust defense against future uncertainties. With these caveats in mind, the Army could further explore options that include the following:

- **Emphasizing "real practice" in unit leader development plans**, shifting their focus from study or readings to tactical exercises without troops, sand table discussions, or other activities that are more applied in nature.
- **Increasing ride-alongs and check rides for unit commanders and lieutenants on staff**, raising exposure levels by "piggy-backing" on other units' events. Creating the time for officers to participate, even as observers, may be difficult and impose a burden on others in the unit, but the benefits may outweigh the costs if ways to minimize the disruption can be found.
- **Increasing observer/controller (O/C) and/or opposing force (OPFOR) opportunities at home station.** If unit training budgets cannot be increased, it may be that the benefit of other units' training can be shared more broadly. Using additional units in an OPFOR role can increase the training value for both sides; costs also increase but presumably would be lower than those of two separate events. Another alternative is for more officers to serve as O/Cs of other units' events, since assessing other units' training can help build useful tactical insights as well as improve interpersonal and mentoring skills. When considering such options, however, commanders should be mindful of the importance of maintaining some level of informal, nonevaluated training, as this encourages greater initiative, creativity, and risk taking.
- **Adding additional field exercises for young officers on unit staffs.** Sending 15–20 lieutenants out for a three-day field exercise, for example, would cost about \$125 (in FY98 dollars) in

equipment costs.⁷ Rotating officers through numerous positions during the exercise would expose them to a variety of perspectives and concerns, broadening their understanding of the total tactical picture. Of course, adding such exercises would mean “losing” these officers from their normal duties for some period of time, necessitating additional resources.

- **For some TDA assignments, providing CTC ride-alongs and/or opportunities for O/C duties.** This option is probably easiest and least costly to accomplish for officers whose TDA assignments are on posts that also house TOE units, but it should be considered for other units as well. Increasing the tactical content of many TDA positions would help officers to maintain and build upon their warfighting skills, easing their eventual transition back into TOE units and bolstering their tactical base.

Beyond the options for raising levels of tactical expertise discussed above, a potentially more fruitful source of ideas resides in the commanders who have been coping daily with constrained circumstances in recent years. It may therefore be useful for the Army to

- **Survey recent and sitting commanders for additional ideas about improving developmental quality.** While some of this occurs informally, a more deliberate effort to survey commanders either during command courses or conferences or in the field could yield innovations that could be easily and fruitfully expanded to the force at large.

Addressing the Experience “Trough”

Recent declines in tactical exposure may also mean that current junior officers are not as well prepared to guide those who will follow as might be desired. A basic assumption imbedded in the nature of

⁷This estimate is derived from a FORSCOM average cost per mile of \$0.41 in FY98, and it assumes a 50-mile average for each of six HMMWVs over the course of the exercise. A similar exercise in an Armor brigade would be much more expensive. Again using a FY98 FORSCOM average of \$395.61 per mile, the equipment costs for an exercise involving four tanks each driven for 150 miles would be \$237,366. Data were obtained from the Army Cost and Economic Analysis Center's OSMIS database, accessed on 24 January 2000.

the Army's closed labor market is that today's trainers (i.e., more senior officers) are sufficiently tactically astute to provide meaningful guidance to their subordinates. The results presented in earlier chapters suggest that this assumption may have become more tenuous in recent years, especially for lieutenants (and to a lesser degree for captains and majors). Thus some additional, short-term actions might be required to specifically address this "experience trough" for these officers. Options include the following:

- **Increasing opportunities for applied tactical practice at the Captains Career Course, and perhaps the Command and General Staff College.** Adding field exercises would of course require additional resources. These should be assessed against both the benefits for future training quality, and the fact that the developmental value of subsequent assignments will also be increased if tactical shortfalls are rectified.

If costs and/or time preclude adding exercises, there is at least one alternative (or additional) option:

- **Bypass or supplement the experience of current junior officers with the expertise of more senior (presumably more tactically sound) officers.** This could be done informally, by increasing local oversight of unit training and leader development plans, or more formally with specialized teams of tactical experts who could review unit procedures and training processes and methods.

IMPROVED OVERSIGHT OF THE CONTENT OF UNIT ASSIGNMENTS

While any or all of the above options could be pursued to increase officers' opportunities to develop tactical expertise during their unit assignments, there is a larger, more systemic issue the Army should address. Effective operation of its entire leader development system is likely to remain a challenge in light of the fluid environment both within and outside the Army. Meeting this challenge requires a more robust system of monitoring and feedback, especially with regard to the developmental value of unit assignments.

An ideal system would explicitly identify both the requirements for and the supply of tactical skills. On the requirements side, existing work should be synthesized and expanded to specify the set of desired tactical skills. However, these efforts would have to go beyond merely identifying the skills themselves, to assess the level at which they are needed (i.e., which skills are needed at which points in an officer's career) and the intended mechanism(s) for developing them (i.e., unit assignments, formal schooling, and/or self-development).

The Army should also establish a procedure for evaluating the *supply* of tactical skills, in order to determine whether it is diverging from desired levels. There are two primary metrics that could be used in this assessment: time spent in certain events (as was used in this study) or a more direct assessment of tactical expertise itself. Information about the time spent is likely to be easier to access, but this would not account for quality or natural ability and is thus less complete than assessing tactical expertise more directly.

Time Spent in Tactical Events

Monitoring exposure levels, or the amount of time spent in various activities, would require evaluating both career patterns and training rates. This in turn would necessitate three actions:

- **Improving the quality of personnel data**, either by passing the burden for greater specificity and consistency to unit personnel clerks or by dedicating staff to this effort at the Army's Personnel Command.
- **Collecting unit training data**. At the unit level, this could be done in a variety of ways, including:
 - **Monitoring executed training miles on weapons systems and ammunition expenditures**. These data are already maintained by the Army training and budget communities. This metric is more appropriate for unit types whose training is closely tied to weapons systems than for those that operate more independently.
 - **Expanding the collection of train-up data at the CTCs**. Currently, some of the CTC O/C teams require rotating units to submit information either before or upon arrival about how

they prepared for their rotations. This information could be standardized and collected centrally. It would not represent the entire force (only those units that attended a CTC in a given year), but would provide some basis for temporal comparisons.

- **Developing a centralized database using unit training calendars and Quarterly Training Briefs.** Though these internal unit documents are prospective and may not reflect last-minute changes to planned events, if they were collected centrally⁸ they might provide the most accurate and complete set of information about unit training activities available from existing sources.
- **Collecting individual training data.** Tracking activities at the unit level may be sufficient for these purposes, and may not require much additional effort. But if unit experiences diverge from those of individual officers, a more detailed approach would be needed.⁹ Options to gather data similar to those we collected for this study include:
 - **Surveying officers directly**, either when they are attending Army schools or through the Internet as they exit key positions.
 - **Surveying commanders about their subordinates' experiences**, perhaps during conferences or higher-echelon pre-command courses.
 - **Expanding upon current reporting methods** to develop a data-collection system for individuals' off-post deployments to include home station training events.

⁸This could be done either through Army channels or by outside agencies. Unpublished RAND research, in which such a database was constructed for heavy units, has shown that it is feasible if units were to retain their records and report them to a central facility.

⁹Caution, of course, is needed in collecting such data about individual officer activities. It should be done in a way that does not allow it to be identified with a specific person, as this could give the impression that the data would be used to evaluate performance or potential, which would not be the intent of such efforts.

- **Creating a “tear-off sheet”** detailing participation in training and deployments during an assignment that could be submitted (anonymously) with an Officer’s Evaluation Report (OER).

Demonstrated Tactical Ability

A second option for assessing the developmental content of unit assignments is to try to measure expertise itself more directly, rather than relying on exposure as an approximation. One shortcoming of such an approach is that it runs the risk of being used to derive inferences about officers’ skills that may not be warranted. It is critical, therefore, to use any efforts to evaluate expertise as an exercise aimed at allowing the Army to better understand the effectiveness of its leader development efforts, rather than as a reflection of the quality of the officers themselves. Ways in which expertise might be evaluated include the following:

- **Expanding existing efforts at Army schools to include a rated field exercise.** The information from this would be used not just to provide individual feedback to the officer, but also (and more importantly for these purposes) to provide data to Army senior leadership on trends about prior unit experiences. Some branch schools (e.g., Infantry) already perform a tactical assessment when officers arrive for courses. However, these tend to be written and to focus on demonstrating familiarity with doctrinal principles rather than the capability to apply them in real-world situations. Inserting a short exercise conducted at the beginning of a course that included rotations through various positions, rated by Small Group Instructors, would provide visibility on aggregate levels of tactical knowledge officers had derived in earlier assignments, and allow for comparisons over time.
- **Analyzing unit performance data collected at CTCs.** RAND is initiating a major data-collection effort at both the National Training Center (NTC) and Joint Readiness Training Center (JRTC) to establish an objective system of monitoring unit performance. Though these data relate to only a portion of the force, they will establish a baseline and allow for trend analysis in a few years. However, the data are limited in that they will relate to unit, rather than individual officer, performance, which may

or may not accurately reflect the officer's level of tactical knowledge.

- **Assessments by local commanders**, if they are comprehensive and consistent, and can be aggregated at higher levels across the force. These evaluations could be modeled after the leader certification system employed at the NTC for those newly assigned to the OPFOR. This program consists of written and oral exams, terrain walks, apprenticeships, and hands-on demonstrations of knowledge, skills, and ability before officers are permitted to serve in their assigned positions (Rosenberger, 1999). It may, however, impose severe time demands on field units. Even with time constraints, a scaled-back version would provide useful information about the level of tactical skill across the force.

Ensuring the continued viability of the Army's leader development system requires, at a minimum, additional monitoring of all three pillars (institutional education, self-development, and operational experience) if they are truly expected to operate in concert to prepare leaders for current and future challenges.¹⁰ Taking action to improve existing opportunities for tactical development will help, but this is not enough to adequately support the long-term maintenance of a sound tactical foundation for the officer corps unless a systematic effort to assess unit experiences is also put into place.

CONCLUSIONS

This research began as an inquiry into whether the operational experience "pillar" of tactical development had weakened over the 1990s. We found evidence that both Infantry and Armor officers had less opportunity to develop their tactical skills in field settings between 1990 and 1998. These declines were due primarily to lower rates of unit training, especially for Armor officers, and to some extent to shorter assignments and changing career patterns, particularly for lieutenants and for majors serving in their first branch-qualifying assignments.

¹⁰For example, advances in pedagogical effectiveness may mean that formal schooling could become shorter and/or shift in content, which would have implications for unit developmental requirements.

Of course, other factors such as education and mentoring could help sustain tactical expertise, as was depicted by the model in Chapter One. However, on-the-job training is the key element, and we know of no reason to believe that any changes in either education or mentoring would have offset the declines in OJT. It stands to reason, therefore, that these officers have lower levels of tactical expertise than did their counterparts in the early 1990s. By extension, compared to earlier officers they are likely to be less adept at decision-making, to face a greater challenge in building strong leader/follower relationships, and to derive less tactical benefit from subsequent opportunities.

This chapter has argued that these probable declines in expertise occurred at the same time that changes in the external environment increased the scope of tactical skills required of combat officers. We therefore conclude that a tactical "gap" has resulted from these divergent trends, despite possible increases in the effectiveness of Army training. Further, without intervention, we do not see any reason to believe that this gap will not persist, or perhaps become larger, in the future.

This study did not address how the Army might increase the tenure of key assignments or the training rate of units, given the size of the changes that would be needed and the probable costs and disruptions they would impose. But even within existing conditions, much can be done. We suggested alternatives both to improve the developmental quality of existing training events and to create additional opportunities for individual officers above and beyond scheduled unit events. We also recommended potential increases in the tactical content of some Army schools in order to improve the tactical knowledge of junior officers, whose experiences in recent years may not be broad enough to allow them to effectively perpetuate the Army training management system in the future.

Most important, however, we argue that the continued tactical competence of the officer corps rests on bolstering oversight of the content of unit assignments. We suggested a number of ways this could be done, either using existing data-collection methods or establishing new ones. Until a formal feedback mechanism is put into place, whatever form it might take, the Army will continue to have imperfect knowledge of the developmental opportunities provided to its

officers. The absence of reliable, objective information hampers the Army's ability to effectively respond to changes and to ensure adequate tactical preparation for its warfighting commanders.

Although we addressed this issue only in its tactical context, the point applies to the operational experience area as a whole, and more broadly to all three "pillars" of the Army's leader development system. The Army expects officers to apply and develop a wide range of leadership skills in their unit assignments. In nontactical areas, opportunities to practice may be less situationally dependent; for example, interpersonal skills can presumably be exercised almost anywhere. Tactical skill, however, is a different matter. The ultimate test is to ensure that the officer's entire range of skills can be employed effectively in the high-stress conditions of combat—which field training is designed to approximate. Without some sort of evaluation mechanism, the Army has limited awareness at senior, central levels about whether the environment allows those skills to be developed. It must instead rely on anecdote, which may be nonrepresentative and/or misinformed and is a dubious basis upon which to make policy changes in an area as important as the development of the officer corps.

It would be prudent, therefore, to begin work on possible ways to evaluate leaders' tactical skills, and to develop a set of tools to assess skill-development opportunities in unit assignments and elsewhere. A more precise understanding of the training that units are actually able to provide would improve judgments about any required changes in the whole leader development system. This would in turn allow for shifts in the developmental duties and responsibilities between schools, units, and individual officers as the environment changes.

Finally, our research focused on increasing tactical exposure; as noted earlier, tactical competence is a necessary but not sufficient characteristic for an effective officer corps. But it is possible that some efforts to increase tactical depth could come at the expense of strategic breadth. Developing officers who have the appropriate levels of tactical competence at each grade and whose perspectives are wide enough to meet challenges that range from prevailing in operational missions to ensuring the long-term viability of the institution, requires a delicate balance of policies that will probably shift

over time. This study is not intended to imply that tactical exposure should be maximized, with all other concerns a second priority. Instead, we attempted to provide empirical information on a widely perceived problem in the combat arms realm, and to identify possible solutions. Any actions must of course be considered in conjunction with the Army's larger interests. However, whatever balance is struck, additional information about the developmental opportunities provided to officers will certainly improve the Army's ability to achieve its leader development goals.

DATA-COLLECTION FORM

This appendix provides a brief explanation of the intent behind our decisions about what to include in our data-collection form, as well as a sample of the form itself. The form was designed to capture information about the training content of officers' current and past assignments. It was designed for administration to battalion and brigade XOs, S3s, and commanders, as well as selected company commanders, who were assigned in 1998 or 1999 to TOE Infantry or Armor brigades in CONUS.

The form included ten different kinds of formal training events, as well as three types of time spent in "other" (informal) training at platoon, company, and battalion and brigade level. These events were identified through reviews of Army training doctrine and in discussions with training experts both in the Army and at RAND, and were intended to encompass all possible training activities. The positions we asked about included command assignments (company, battalion, and brigade), battalion and brigade S3 and XO positions, and two "catch-all" categories for all other battalion and brigade staff positions.

We did not include assignments at division or above, nor those in TDA units. This is in part because we wanted to limit the number of categories for respondents. It was also based on the assumption that these other assignments were less likely to involve much hands-on training, so that our categories would allow us to capture the majority of the opportunities for tactical OJT. As for TOE assignments to division and corps staffs, these assignments do involve participation in some training events, and many include planning and coordina-

tion of training events and resources. While these assignments are useful in many ways, we determined that they were not likely to involve as many opportunities to apply tactical skills, which was our principal interest.

1. FIELD TRAINING

The rows of this chart [see next page] represent positions you may have held. The columns represent specific training events that may have occurred during your tenure in that position.

(a) For **TOE Assignments** in each of the selected positions estimate the total number of months you spent in the position (aggregating any multiple assignments, say, as a platoon leader, or in other principal staff jobs). Please write in the positions for other BN or BDE staff assignments. Do not include time in an acting capacity. For assignments you have never held, enter "0".

(b) For the positions you held and the **Field Training Events** listed, estimate the total number of weeks you spent engaged in each training event while you held the designated position. Include time spent in ramp-ups or preparatory events. If an event did not occur during the time you held the position or is not applicable to the position, enter "N/A". If the event occurred but you did not participate, enter "0".

ASSIGNMENTS (In JOE Units)	FIELD TRAINING EVENTS (Total time spent — in weeks)											
	Time in position (in months)	Table VIII/XII or LFX DISMTS	PLT Level FTX	Other PLT Level Field Tng	CO Level CALFEX	Other CO Level Field Tng	BN/BDE Level FCX	BN/BDE Level FTX	Other BN/BDE Level Field Tng	OPFOR (Other than at CTC)	O/C (Other than at CTC)	CTC OPFOR
CO CDR												
BN S-3												
BN XO												
Other BN Staff (_____)												
BN CDR												
BDE S-3												
BDE XO												
Other BDE Staff (_____)												
BDE CDR												

Please indicate: The total number of CTC rotations during your career _____.

Number as OPFOR _____.

2. SIMULATION

For each position you have held, estimate the total number of weeks you spent receiving training using each simulation. Where a training event involved multiple simulations, please record it only once in the column that best represents your participation.

ASSIGNMENTS	SIMULATION EVENTS (Time in weeks)							
	SIMNET	JANUS	ARTBASS	BBS	DIV BCTP	CORPS BCTP	OTHER Time Type (wks)	
CO CDR								
BN S-3								
BN XO								
Other BN Staff (_____)								
BN CDR								
BDE S-3								
BDE XO								
Other BDE Staff (_____)								
BDE CDR								

3. DEPLOYMENTS

Please list the deployments that you have participated in throughout your career, including (a) the location or purpose of the deployment (e.g., Cobra Gold, Desert Storm, Reforger, etc. Please do not include deployments to habitually-used training areas such as Yakima, Piñon Canyon, or Grafenwoehr, as these should be included on the Field Training Events page); (b) the position you were assigned to at the time; (c) the length of the deployment, in weeks; (d) whether the deployment was with your unit or as an individual tasking; and (e) whether the deployment contributed to the development of your warfighting skills. If you need additional space, continue on the reverse side of this page.

[illegible]

SAMPLE DESIGN, STRUCTURE, AND REGRESSION ANALYSIS

This appendix expands upon the information provided in Chapter Three about the primary data we collected on the content of assignments, and the design and results of our analysis. The first section discusses the data themselves, including our analysis design and response patterns, as well as potential sources of bias. The second section provides additional detail about the structure of our regression models, along with a more detailed presentation of our results.

DESCRIPTION OF DATA

Analysis Design

Our approach to assessing assignment content had two characteristics that may affect the interpretation of our findings. The first was our unit of measure. In all of our regression models, our primary variable of interest was the total amount of time spent engaged in various categories of training and deployment events, which was intended to approximate developmental opportunities. One drawback to this metric of “time spent” is that it does not include any qualitative dimension. It is entirely possible, for example, that an officer could learn more about tactics in a well-designed field exercise lasting one week than he could in a poorly planned three-week event. In fact, many officers we interviewed stated their belief that the Army has become much more efficient and effective in its training, and that the quality of training events is generally higher than it has been, particularly in the more distant past. At the same time, high training levels necessarily equate to greater developmental opportunity: some units, we were told in our interviews, were engaging

in so many training events back-to-back that preparation, review, and retraining to incorporate lessons learned were in some cases falling by the wayside.

We determined that developing an objective metric to fairly capture the quality of training and deployment events was beyond the scope of this effort. We therefore decided that time spent, though imperfect, was the best available approximation of opportunity.

A potentially more serious limitation of our design is that the absence of alternative sources of information forced us to rely on officers' recollections about what they had done much earlier in their careers, which in some cases had been up to eight years before (for assignments that began in 1990). It is not clear whether officers were more likely to over- or underestimate their actual experiences in retrospect. Though a review of the relevant literature did not produce evidence that memories of historical events are subject to a systematic bias (e.g., embellished or diminished recollections of the past), it is possible that nostalgia for the "good old days" prompted the officers we surveyed to inflate their recollections of the amount of training they had done earlier in the decade. But it is also possible that they were less likely to remember the full range of training events in which they had actually participated, and thus that they would have "underreported" true training levels.

We attempted to minimize the occurrence of distorted recall both in the design of our data-collection form (i.e., by requesting information about very specific events and by "grounding" respondents in recent assignments first) and in our administration of the form. We expected that sending the forms in advance of our unit visits would allow officers to access any personal records and/or other data sources (e.g., spouses) to improve the quality of their responses. Further, by conducting in-person interviews with as many of the respondents as possible, we hoped to decrease the possibility of casual or perfunctory responses. In observing the reasoning processes officers used to estimate their activities in the (sometimes distant) past, we noted that they tended to have clear memories of the number of times most events occurred (sometimes by making comparisons to current activity levels), and they then associated some typical duration with the frequency of those events. Although this measure is informal, it reinforced our belief that the events

included in the data-collection form were salient and significant, and tended to be easy for officers to retrieve with high degrees of confidence. So although the problems with the validity of self-reporting are a drawback in any data-collection effort that relies on individual recall, we ultimately determined that there was no reasonable alternative or workaround and took numerous steps to minimize potential bias and distortion.

Sampling Frame and Resulting Data

Beyond the caveats above, the set of officers from whom we sought information, as well as our resulting response rates, also has an impact on the interpretation of our results. The primary determinant of our overall sampling strategy was our decision to capture the current experiences of officers serving in key developmental positions in Infantry and Armor units, who were the primary source of the developmental concerns expressed in our interviews. For fiscal and logistical reasons, we limited ourselves to officers in units in the continental United States (CONUS). We were later able to supplement this group with officers attending the battalion and brigade Pre-Command Courses (PCCs) at Forts Benning and Knox.

Our sampling frame was thus defined as all commanders, XO's, and S3s serving in an Infantry or Armor brigade or battalion in CONUS, as well as one company commander from each battalion. These units were stationed at ten separate locations across the United States. Table B.1 depicts the numbers and locations of the units from which the officers we sampled were drawn.

We requested data from the officers serving in key positions in each of these units. Our overall response rate was about 60 percent. Perhaps the most important implication of our response rates was the low level of participation at Fort Hood. We were not able to collect any data from the Infantry brigade of the 4th Infantry Division that is stationed there. This fact, however, may not have had a major impact on our ability to characterize the basic training patterns of "normal" Infantry units, because this brigade (along with another Armor brigade from the same division) is engaged in experimentation with digital equipment and technologies. The degree to which its training patterns thus diverge from those in more typical brigades is not known, but we do not expect the exclusion of data from this

Table B.1
Units Included in Sampling Frame, by Installation

Installation	Infantry Brigades	Armor Brigades	Infantry Battalions	Armor Battalions	Total (Brigade/Battalion)
Fort Benning, GA	1		2	1	1/3
Fort Bragg, NC	3		9		3/9
Fort Campbell, KY	3		9		3/9
Fort Carson, CO	1	1	2	4	2/6
Fort Drum, NY	2		6		2/6
Fort Hood, TX	1	4	6	9	5/15
Fort Lewis, WA	1	1	4	2	2/6
Fort Polk, LA		1		3	1/3
Fort Riley, KS		2	2	4	2/6
Fort Stewart, GA	1	1	3	3	2/6
Total	13	10	43	26	23/69

unit to have had a major impact on the representativeness of our sample.

Perhaps more important was the fact that we were not able to collect data from any of the three Armor brigades of the 1st Cavalry Division also stationed at Fort Hood, as they were engaged in preparation for a deployment to Bosnia. It may be that these units were engaged in significantly more training as part of this preparation; if so, including data from officers in those units would probably have raised the mean values for training in 1997 and 1998, perhaps resulting in weaker support for our hypotheses than we report here. But it is also possible that the training levels for these units did not, on average, differ significantly from other Armor brigades during the same period. There is at least one reason to expect that this might be the case. We were repeatedly told in interviews (conducted both for this study and for the larger TEMPO study of which this effort is a part) that access to training space at Fort Hood was limited, and that competition for ranges among the five brigades permanently stationed there was intense. Thus it may be that the *focus* of the training for

the units expecting to deploy changed during the preparation phase rather than increased, because the potential for large amounts of additional training was limited. If this is the case, then low response rates from these brigades should not have had a major effect on our results.

Another implication of our overall design was that our data were somewhat geographically skewed over time. Because the overwhelming majority of the officers in our sample were currently serving in CONUS assignments, our information in 1997 and 1998 applies to CONUS positions only. But because we also asked officers about all their previous assignments in warfighting brigades, and they had served those assignments not only in CONUS but also in other theaters, data for earlier assignments were geographically varied. This inconsistency precluded us from making geographic comparisons over time, although our regression models did take assignment location into account.

It is also possible that our design could have introduced some selection bias. The data from historical assignments came from officers who both have continued to be promoted and have chosen to remain in the Army. Either or both of these factors could mean that they were more likely than their peers to have had higher levels of tactical exposure in their prior assignments; such "nonrepresentativeness" would lead to bias in our results.

First, the Army has continued to promote the older officers that we surveyed, a process that becomes increasingly selective at each grade. If those who are more likely to have higher levels of tactical exposure were also more likely to be promoted, data from older assignments would be upwardly biased. There is some reason to believe this may in fact be the case, although this effect may not be as large as initially expected. The information available to promotion boards includes a history of assignments and the evaluations of superior officers. There is likely to be some association between tactical exposure and the units to which an officer is assigned; units that are slated to deploy earlier to real-world operations typically train (or are believed to train) at higher rates than later-deploying units, so that an officer who has served in such organizations might be expected to have had more exposure to training events than an officer who was assigned elsewhere. However, discussions with officers

who have served on such boards suggest that the subjective assessments of senior officers hold more weight than do assignments to specific units, and that these evaluations tend to focus more heavily on how the officer responded to the opportunities afforded him than the quality or quantity (above a reasonable minimum) of those opportunities themselves. If this is true, it implies that individual characteristics and abilities are more likely to be responsible for continued promotion than are the levels of training exposure, and thus the data would not be heavily influenced upward merely because an officer has advanced.

This is not the case, however, in the case of deployments; promotion boards are typically aware of whether an officer has participated in a real-world operation, which many believe increases the chance of promotion (all else being equal). Thus it seems reasonable to expect that the more senior officers we surveyed may have been more likely than the average officer in their cohort to have spent more time deployed, though the degree of this bias is not clear.

Another and perhaps more serious problem is that officers with higher-than-average levels of tactical exposure may have “self-selected” through their decision to remain in the Army, while those with lower levels chose to pursue other opportunities either in the nonwarfighting parts of the Army or in the civilian world. Many officers we spoke with cited opportunities for tactical training as a major, if not the primary, motivation for joining the Army. Assuming that this sentiment is fairly widespread, it is possible that people who did not feel they were getting enough opportunities to practice their craft chose to remove themselves from the competition for higher levels of command, and thus from our sample population. Conversely, it may be that *too much* training might have driven some people from the force; we certainly spoke with officers who cited the fast pace of operations as a strain on their families and personal lives, including some who stated that they loved their jobs but needed greater predictability and stability and were thus choosing to depart. The reality, then, may be that there is some “band” of acceptable levels of training, within which training is frequent enough to be professionally satisfying but still allows enough time for other priorities. If this is the case, then the officers who remain in the force (and thus were a part of the population from which we drew our sample) would

represent a middle range of exposure to training: not necessarily those who had experienced the highest levels, nor the lowest.

When administering the data-collection form, our general practice was to also request an interview with each officer. We mailed the forms a few weeks in advance of our visit, which were distributed to the relevant officers within the unit and were to be completed prior to our arrival. We then reviewed the forms during individual interviews and asked a series of questions about developmental opportunities. A few units were unable to accommodate our request for personal visits because of other commitments, but most participated by submitting data-collection forms by mail. There were some cases in which an officer filling one of the positions of interest was not available during our visit to the unit, or (in rare instances) a key position was vacant. In the first instance, we asked that the unavailable officer complete the data-collection form and return it by mail. When the data form was submitted by mail, we tried (and in most cases succeeded) to conduct phone interviews to supplement our analysis. Ultimately we conducted interviews with 192 different officers in our sampling frame. This represented 56 percent of the entire population, and over 80 percent of those from whom we successfully collected data.

From this unit sampling strategy, we derived information about 476 assignments; Table B.2 summarizes these assignments by branch, position type, and year. (Again, each assignment is one observation.)

Given our sample design, response patterns, and data-cleaning efforts, it is probable that our results are biased in some way. However, many of the potential biases operate in opposite directions, precluding a reasonable determination of their net effect. Ultimately we cannot determine “ground truth,” but given the constraints we faced, we believe that the data we collected represent a valuable source of information about assignment content that exceeds the bounds of current knowledge, and that they serve as a basis for additional work that can hopefully improve upon our initial efforts.

MODEL DESIGN

We used 16 different regression models to estimate changes in assignment content. These models tested whether the amount of

Table B.2
Number and Type of Assignment Observations, 1990–1998

	1990		1991		1992		1993		1994		1995		1996		1997		1998		Total	
	IN	AR	IN	AR	IN	AR	IN	AR	IN	AR	IN	AR	IN	AR	IN	AR	IN	AR	IN	AR
CO CDR	21	7	11	7	8	4	4	2	2	0	0	0	0	0	5	3	19	5	70	28
BN STF	4	5	6	2	2	1	1	0	5	2	7	3	3	0	6	3	1	0	35	16
BN S3	4	0	0	0	1	1	7	4	4	9	8	6	4	3	9	6	26	8	63	37
BN XO	0	1	2	0	1	2	3	0	6	2	3	4	3	3	5	5	22	6	45	23
BDE STF	5	3	1	3	3	0	0	0	3	0	0	0	4	1	12	4	3	1	31	12
BDE S3	0	0	1	0	1	0	1	3	5	2	6	3	4	2	1	1	6	4	25	15
BDE XO	1	0	0	0	0	0	0	2	2	1	0	0	1	2	3	3	9	3	16	11
BN CDR	0	1	1	0	1	2	1	0	2	2	0	0	1	1	8	4	12	6	26	16
BDE CDR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	1	5	2
Total	35	17	22	12	17	10	17	11	29	18	24	16	20	12	51	30	101	34	316	160

time that Infantry and Armor officers, respectively, spent in eight separate activities had changed over time. In each model, the length of time spent in the relevant training or deployment activity was the dependent variable. Two different model variants were used: a “rates” model that tested for a linear trend over time, and a “levels” model that tested whether levels of time spent varied as a step function of time. Table B.3 lists abbreviations and definitions for both the dependent and independent variables that were used in the 16 models.

Table B.3
Definition of Variables Used in Regression Model

Variable Abbreviation	Model ^a	Definition
Dependent Variables		
HS TOT	R, L	Weeks per assignment spent in home station training
SIM	R, L	Weeks per assignment spent in simulation training
LVFR	R, L	Weeks per assignment spent in live-fire training
MNVR	R, L	Weeks per assignment spent in maneuver training
PLT/CO	R, L	Weeks per assignment spent in PLT- or CO-level training
BN/BDE	R, L	Weeks per assignment spent in BN- or BDE-level training
OP DEP	R, L	Weeks per assignment spent in deploy'ts other than to CTCs
CTC	R, L	Weeks per assignment spent deployed to CTCs
Independent Variables		
CONS	R	Constant term, represents company commanders whose assignments were in CONUS and began in 1990
CONS	L	Constant term, represents company commanders whose assignments were in CONUS and began in 1990–1991 for Infantry live-fire model, 1992–1993 for Infantry non-CTC deployments model
90s	R	Time trend variable ranging from 0 to 8 to represent a linear trend throughout the 1990s (0 for 1990, 1 for 1991, . . .)
MID90s	L	Dummy variable that takes on the value 1 if the assignment began in 1992–1996 for Infantry live-fire model, 1994–1995 for Infantry non-CTC deployments model, 0 otherwise

Table B.3—continued

Variable Abbreviation	Model ^a	Definition
END90s	L	Dummy variable that takes on the value 1 if the assignment began in 1997–1998 for the Infantry live-fire model or 1996–1998 for Infantry non-CTC deployments model, 0 otherwise
BN S3	R, L	Dummy variable that takes on the value 1 if the assignment was as a battalion S3, 0 otherwise
BN XO	R, L	Dummy variable that takes on the value 1 if the assignment was as a battalion XO, 0 otherwise
BN CDR	R, L	Dummy variable that takes on the value 1 if the assignment was as a battalion commander, 0 otherwise
BDE S3	R, L	Dummy variable that takes on the value 1 if the assignment was as a brigade S3, 0 otherwise
BDE XO	R, L	Dummy variable that takes on the value 1 if the assignment was as a brigade XO, 0 otherwise
BDE CDR	R, L	Dummy variable that takes on the value 1 if the assignment was as a brigade commander, 0 otherwise
BN STF	R, L	Dummy variable that takes on the value 1 if the assignment was to a battalion staff (in other than an XO or S3 position), 0 otherwise
BDE STF	R, L	Dummy variable that takes on the value 1 if the assignment was to a brigade staff (other than as an XO or S3), 0 otherwise
AKHIPAN	R, L	Dummy variable that takes on the value 1 if the assignment was in Alaska, Hawaii, or Panama, 0 otherwise
EURSWA	R, L	Dummy variable that takes on the value 1 if the assignment was in Europe or Southwest Asia, 0 otherwise
KOREA	R, L	Dummy variable that takes on the value 1 if the assignment was in Korea, 0 otherwise
WIP	R, L	Number of weeks spent in the assignment

^aAn “R” indicates the variable was included in the “rates” model, “L” indicates the variable was included in the “levels” model.

We first estimated each model using ordinary least squares (OLS). Diagnostic tests of these regressions showed evidence of heteroskedasticity (nonconstant variance in the error terms). A variety of other functional forms were tried in an effort to correct for this

problem, but none resulted in clear improvements. Ultimately, we decided to use an alternative robust regression estimator, the White estimator.¹ This technique corrects for the violation of the OLS assumption of constant variance in the error terms. It generally had the effect of widening our confidence intervals, decreasing the estimated precision of our estimates.

We also recognized the possibility that some officers may have systematically over- or underestimated their participation in training and deployment events. This possibility would have caused correlation in the error terms, again a violation of OLS assumptions. To correct for this, we used an estimation technique that relaxes the assumption of independence between observations. This too had the effect of increasing the confidence intervals and reducing the precision of our estimates.²

Models for Infantry Officers

Reflecting these corrections, the model predictions for Infantry officers are shown in Table B.4. The eight models appear in the last eight columns of the table, with coefficients and their t-statistics in parentheses below. All variables are estimated in weeks.

Models for Armor Officers

Table B.5 shows the results of the eight regression models for Armor officers. As with the earlier table for Infantry officers, the eight models appear in the last eight columns of the table, with coefficients and their t-statistics in parentheses underneath, and all variables are estimated in weeks.

¹White, among others, developed this estimator and described its statistical properties (White, 1980; 1982).

²This cluster option for the White estimator was developed by Rogers (Rogers, 1993).

Table B.4
Regression Model Estimates (Infantry Officers)

Model → Var ↓	Sample Mean	IIS TOT	SIM	LVFR	MNVR	PLT/CO	BN/BDE	OP DEP	CTC
CONS		15.90 (3.71)	-2.03 (-1.92)	2.62 (2.25)	12.64 (3.56)	14.52 (4.47)	1.10 (0.57)	-7.02 (-2.63)	-0.34 (-0.30)
90S		-0.41 (-1.28)	0.16 (1.96)		-0.48 (-1.79)	-0.38 (-1.52)	-0.08 (-0.44)		0.02 (0.21)
MID90s				2.24 (2.79)				4.92 (2.74)	
END90s				0.78 (-2.39)				1.84 (1.61)	
BN XO	0.14	-8.69 (-3.21)	0.47 (0.84)	-2.17 (0.99)	-6.46 (-2.92)	-10.70 (-5.00)	2.64 (1.96)	0.88 (0.73)	0.30 (0.53)
BN S3	0.19	-4.40 (-1.82)	1.47 (2.45)	0.30 (0.38)	-4.98 (-2.53)	-5.74 (-3.11)	1.66 (1.52)	0.58 (0.44)	0.13 (0.27)
BN CDR	0.08	-4.42 (-1.32)	2.59 (2.54)	0.04 (0.03)	-3.81 (-1.49)	-5.65 (-1.96)	2.18 (1.42)	-1.38 (-0.78)	0.65 (0.80)
BDE XO	0.05	-13.12 (-3.89)	0.85 (1.05)	-2.88 (-2.38)	-9.58 (-3.15)	-15.94 (-7.63)	3.80 (1.54)	1.71 (1.07)	0.73 (0.84)
BDE S3	0.08	-13.06 (-5.47)	3.42 (3.41)	-3.90 (-4.18)	-10.04 (-4.95)	-15.60 (-8.07)	2.71 (2.02)	-0.20 (-0.12)	0.95 (1.45)
BDECDR	0.02	-6.14 (-1.07)	1.59 (1.00)	0.69 (0.38)	-7.88 (-1.83)	-10.57 (2-15)	3.45 (1.79)	-2.13 (-0.83)	0.70 (0.45)
BN STF	0.11	-15.71 (-5.26)	0.50 (0.67)	-3.89 (-4.46)	-11.87 (-4.81)	-15.61 (7.18)	0.48 (0.38)	1.01 (0.55)	-0.21 (-0.34)
BDE STF	0.10	-20.03 (-7.49)	0.91 (1.43)	-5.09 (7.38)	-14.93 (-6.47)	-19.45 (9.47)	-0.11 (-0.10)	-0.06 (-0.04)	1.34 (2.30)
AKHHPAN	0.07	-0.33 (-0.11)	0.02 (0-04)	4.23 (2.59)	1.05 (0-38)	1.54 (0.67)	-1.92 (-1.38)	-2.71 (-1.74)	-0.94 (-1.64)
KOREA	0.04	7.88 (2.61)	2.87 (1.82)	-2.14 (-3.19)	2.14 (1.08)	3.46 (1.16)	3.33 (1.65)	1.30 (0.96)	-2.45 (-5.58)
EURSWA	0.06	-1.70 (-0.44)	2.28 (1.53)	-0.02 (0.01)	0.67 (0.19)	1.27 (0.45)	-0.60 (-0.34)	8.90 (1.34)	1.60 (1.02)
WIP	58.70	0.24 (6.53)	0.05 (4.43)	0.17 (4.05)	0.19 (5.78)	0.13 (4.57)	0.11 (5.28)	0.13 (4.43)	0.04 (5.71)

N = 316.

Table B.5
Regression Model Estimates (Armor Officers)

Model → Var ↓	Sample Mean	HSTOT	SIM	LVFR	MNVR	PLT/CO	BN/BDE	OP DEP	CTC
CONS		9.17 (1.49)	-0.89 (-0.29)	3.07 (1.58)	7.29 (1.35)	7.25 (1.53)	3.11 (0.86)	-14.66 (-1.87)	1.16 (0.78)
90s		-1.09 (-2.12)	0.09 (0.40)	-0.34 (-1.79)	-0.82 (-1.90)	-0.59 (-1.58)	-0.57 (-1.63)	1.06 (1.80)	-0.27 (-2.20)
BN XO	0.14	-4.35 (-1.13)	0.25 (0.17)	0.40 (-0.31)	-5.44 (-1.54)	-6.21 (-2.29)	0.37 (0.13)	7.17 (1.75)	-0.09 (-0.09)
BN S3	0.23	2.48 (0.73)	2.13 (1.57)	2.33 (2.05)	-0.53 (-0.16)	1.17 (0.44)	0.62 (0.27)	3.46 (1.14)	0.90 (1.03)
BN CDR	0.10	1.78 (0.37)	1.52 (0.83)	3.78 (1.57)	-3.03 (0.75)	2.09 (0.43)	-1.34 (-0.56)	2.64 (0.65)	0.63 (0.63)
BDE XO	0.07	-7.97 (-2.00)	3.11 (1.19)	-1.85 (0.98)	-7.40 (-2.16)	-11.37 (-3.57)	2.12 (0.86)	6.24 (1.39)	2.57 (1.92)
BDE S3	0.09	-2.90 (-0.64)	1.87 (0.78)	-0.39 (0.24)	-2.07 (-0.51)	-5.49 (-1.81)	3.03 (1.05)	3.92 (1.09)	-0.23 (-0.22)
BDE CDR	0.01	1.63 (0.33)	0.29 (0.07)	2.73 (2.76)	-2.71 (-0.47)	0.05 (0.02)	-0.02 (-0.01)	-1.81 (-0.62)	1.24 (0.81)
BN STF	0.10	-8.36 (-1.88)	-2.44 (-1.62)	-1.72 (-1.16)	-8.70 (2.40)	-9.52 (-2.76)	0.90 (0.33)	4.60 (0.78)	-1.01 (-0.88)
BDE STF	0.08	-4.35 (-1.01)	1.33 (0.70)	2.68 (-1.93)	-1.78 (-0.39)	-9.16 (-2.71)	-4.70 (-1.29)	6.67 (1.18)	-0.08 (-0.09)
KOREA	0.01	-3.17 (-1.00)	-1.33 (-0.59)	0.74 (0.66)	-4.66 (-1.30)	0.55 (0.22)	-4.46 (-2.49)	5.32 (1.69)	-4.71 (-2.34)
EURSWA	0.19	-4.74 (-1.90)	1.32 (0.85)	-0.72 (-0.83)	-3.97 (-1.44)	-2.38 (-1.25)	-2.30 (-1.36)	-9.31 (-2.11)	-0.50 (0.65)
WIP	61.40	-0.30 (6.52)	0.07 (2.50)	0.07 (4.14)	0.23 (5.20)	-.20 (4.97)	0.10 (3.46)	0.16 (2.55)	0.04 (4.22)

N = 160.

CAREER HISTORIES

This appendix amplifies some of the information presented in Chapter Four about the career histories of officers who left key positions in 1990 and 1998. As in Chapter Four, the figures in this section show the average time spent in assignments overall (total time), as well as in two subsets of that time: TOE versus TDA time (i.e., time spent in TOE unit assignments and time spent in TDA unit assignments), and leadership versus staff time (i.e., time spent in command and platoon leader assignments and time spent in other types of assignments). Averages for platoon leaders, company commanders, battalion S3s and XOs, brigade S3s and XOs, and battalion and brigade commanders were presented in Chapter Four. The figures in this section present additional detail for officers who held these positions for the first time, and for those who had already held a like assignment at least once previously. This information is presented for platoon leaders and company commanders, and for Infantry battalion XOs and brigade S3s; for the other position types, the numbers of first- and second-or-more position holders were sufficiently small as to make distinctions between the two groups uninteresting. The underlying values for these figures, as well as for the overall averages for each position type, can be found in Tables C.1 and C.2 at the end of this appendix. Tables C.3 and C.4 show additional detail about how the category of "leadership" time was allocated between platoon leader and company, battalion and brigade command, by position type. Branch-qualifying time as majors is also included.

Infantry Officers

As Figures C.1 and C.2 show, although the total amount of time platoon leaders (both first-time and repeat platoon leaders) had spent in unit assignments did not change on average between 1990 and 1998, the allocation of that time did shift. Both groups of platoon leaders saw statistically significant declines in TOE and leadership (i.e., platoon leader) time, and increases in TDA and staff assignments.

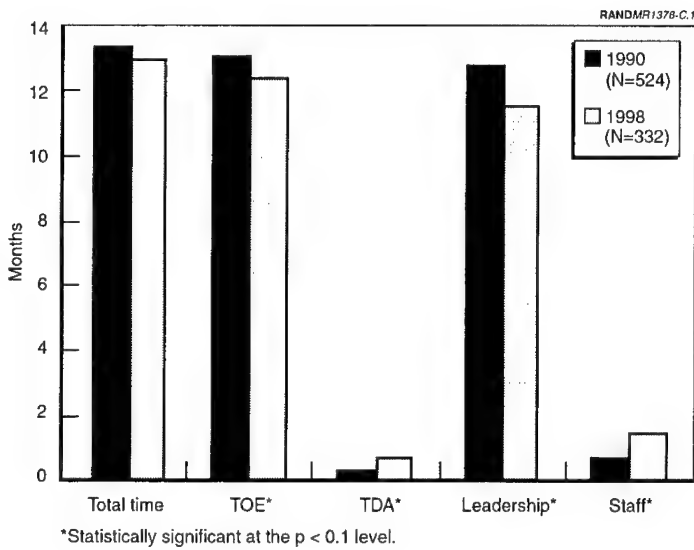


Figure C.1—Career Histories, First-Time Platoon Leaders (Infantry Officers)

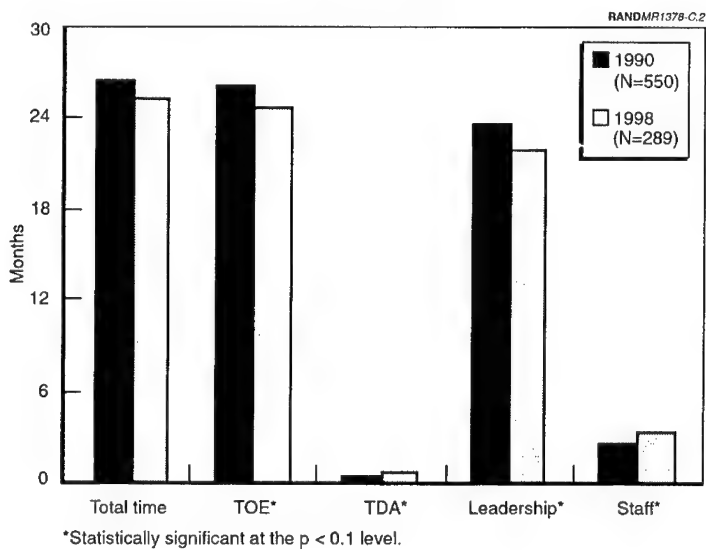


Figure C.2—Career Histories, Repeat Platoon Leaders (Infantry Officers)

Figure C.3 shows that first-time company commanders in 1998 had spent more overall time in unit assignments (i.e., that they were more senior than like commanders in 1990), and that more of this time had been spent in TOE units and in leadership assignments. As shown in Figure C.4, there were no significant changes in the career histories of repeat company commanders.

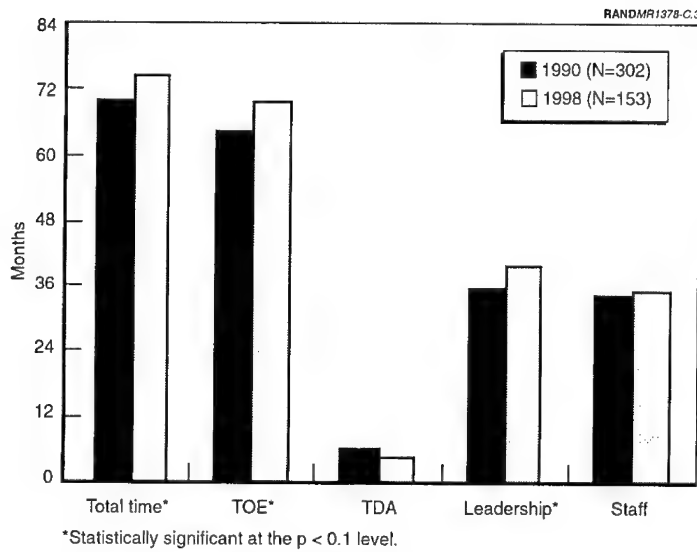


Figure C.3—Career Histories, First-Time Company Commanders (Infantry Officers)

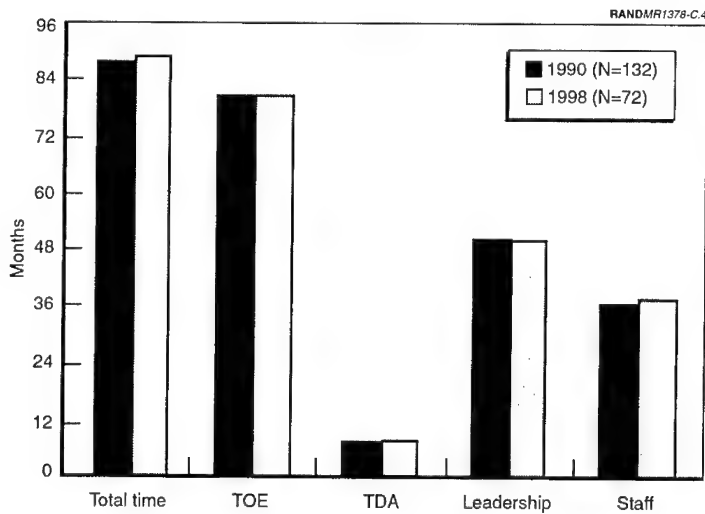


Figure C.4—Career Histories, Repeat Company Commanders (Infantry Officers)

First-time battalion XOs in 1998 had spent less total time in unit assignments, due to decreases in TDA and staff positions, than did like officers in 1990. The decrease is significant. (Time in TOE and leadership positions did increase, but not significantly.)

Battalion XOs who had already held at least one earlier XO or S3 assignment displayed the same basic patterns (i.e., less total assignment time, and less in TDA units and in staff positions), but none of these differences were statistically significant.

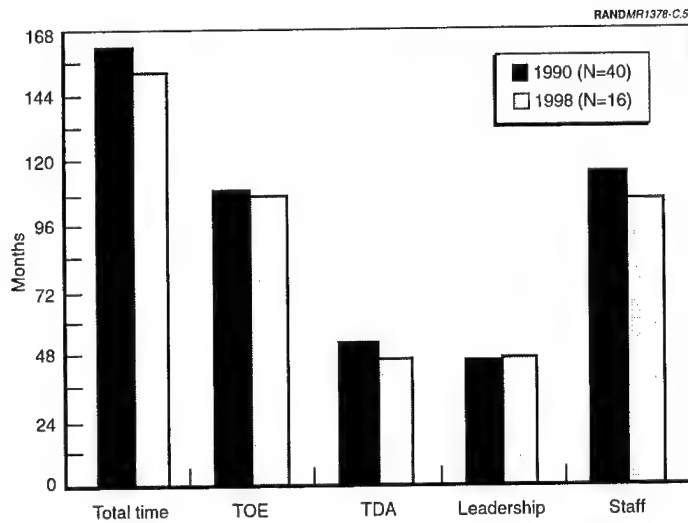


Figure C.5—Career Histories, First-Time Battalion XO (Infantry Officers)

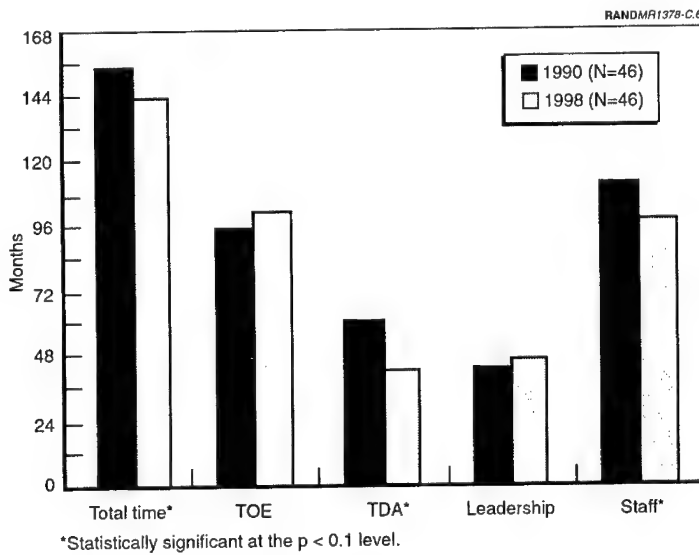


Figure C.6—Career Histories, Battalion XO with Prior Branch-Qualifying Experience (Infantry Officers)

The number of first-time brigade S3s was small in both 1990 and 1998 (six of 21 in 1990, five of 23 in 1998), which meant that differences in career patterns were less likely to be statistically significant. In fact changes in time spent in various assignments was fairly similar, although as Figure C.7 shows, S3s in 1998 had spent significantly more time (15.5 months) in TOE unit assignments than had like officers in 1990.

The same held true for brigade S3s with prior BQ experience (over 70 percent of all S3s in both 1990 and 1998)—in 1998, they had spent more time in TOE unit assignments, but also significantly less time in TDA positions. The changes in overall time in unit assignments, and in leadership and staff positions, were small enough to be potentially due to chance.

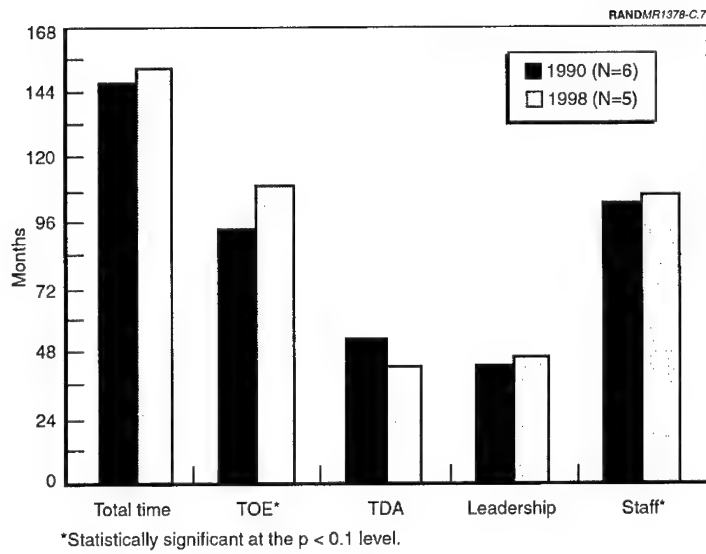


Figure C.7—Career Histories, First-Time Brigade S3s (Infantry Officers)

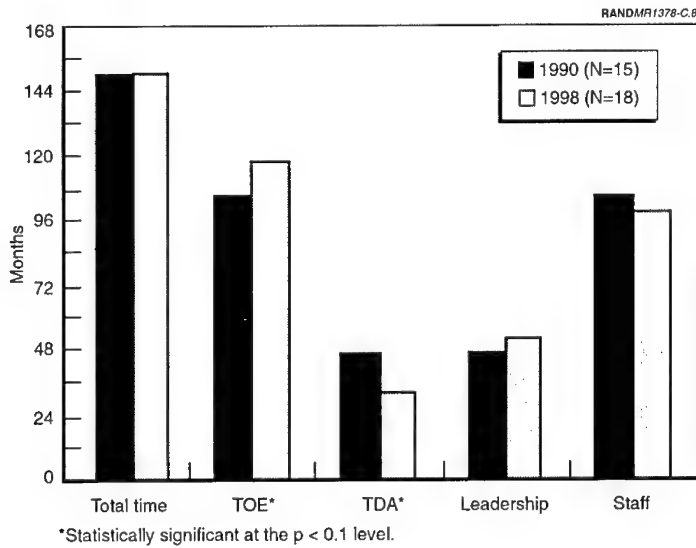


Figure C.8—Career Histories, Brigade S3s with Prior Branch-Qualifying Experience (Infantry Officers)

Armor Officers

Figures C.9 through C.12 present the same information for Armor platoon leaders and company commanders. Figures are not shown for battalion XOs because there were no significant differences between 1990 and 1998 for either first-time XOs or XOs with prior branch-qualifying experience. Nor are brigade S3s included, because at least 80 percent of the S3s in both 1990 and 1998 had prior BQ assignments, so distinctions between the two groups were not meaningful.

First-time platoon leaders in 1998 spent about the same amount of time in unit positions overall, but their platoon leader assignments were shorter by about two months and they had spent more time in staff positions. Repeat platoon leaders in 1998, on the other hand, had spent about the same amount of total time in all of their platoon leader positions as had repeat platoon leaders in 1990; they too had spent more time in staff positions, but this was reflected in an increase in total time spent in unit assignments overall.

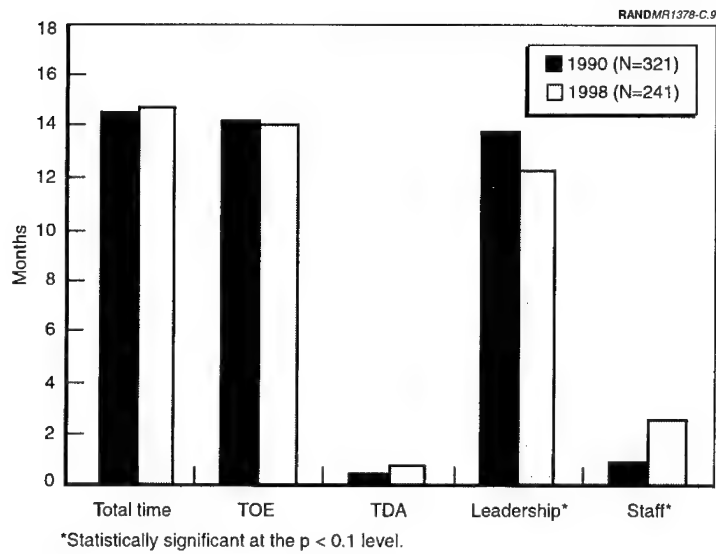


Figure C.9—Career Histories, First-Time Platoon Leaders (Armor Officers)

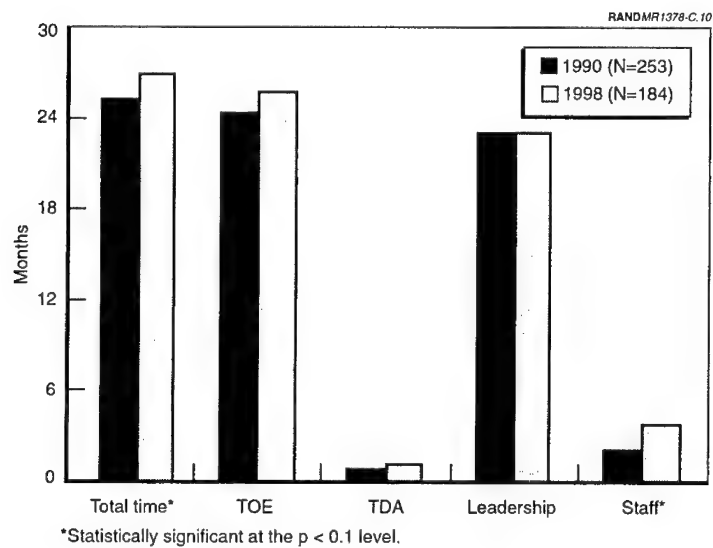


Figure C.10—Career Histories, Repeat Platoon Leaders (Armor Officers)

The only significant difference between 1990 and 1998 for first-time company commanders was in the amount of time they had spent in leadership positions (i.e., company command and platoon leader assignments). Later commanders averaged almost three months more in leadership jobs than had first-time commanders in 1990.

Patterns of change between assignment types were similar for repeat company commanders to those departing their first command, though none of the changes between 1990 and 1998 were statistically significant for repeat commanders.

The tables on the following pages show the actual number of months spent in various assignment types, with an overall average and further distinction between first-time and repeat position holders, where relevant.

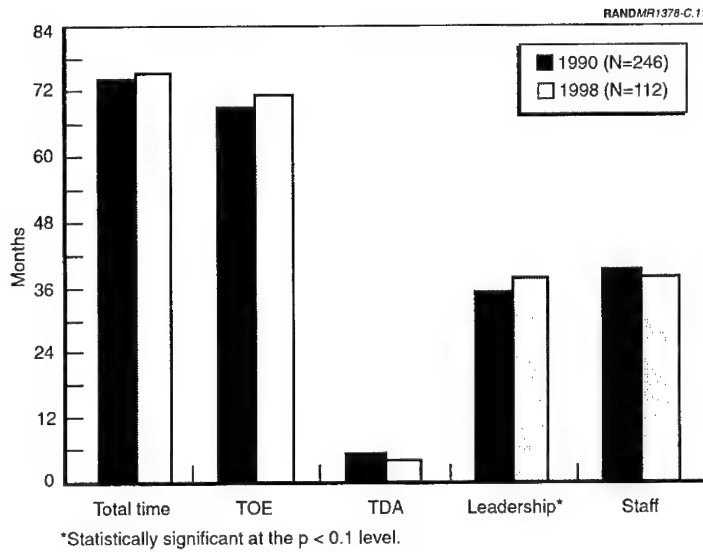


Figure C.11—Career Histories, First-Time Company Commanders (Armor Officers)

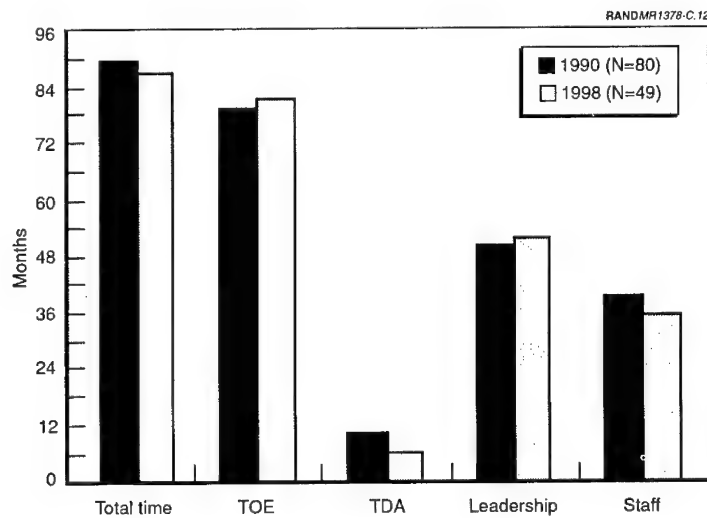


Figure C.12—Career Histories, Repeat Company Commanders (Armor Officers)

Table C.1
Career Histories of Time Spent in Assignments (Infantry Officers)

	N		Total Time			Total TOE		
	1990	1998	1990	1998	%Δ	1990	1998	%Δ
PLT LDR	1074	621	20.0	18.7	-6.5%*	19.7	18.1	-8.1%*
1st PLT LDR	524	332	13.3	12.9	-3.1%	13.0	12.3	-5.4%*
2nd PLT LDR	550	289	26.3	25.4	-3.5%	26.0	24.7	-5.0%*
CO CDR	434	225	75.3	79.1	5.0%*	69.1	73.6	6.5%*
1st CO CDR	302	153	69.9	74.5	6.6%*	64.3	70.3	9.3%*
2nd CO CDR	132	72	87.7	88.9	1.3%	80.3	80.6	0.4%
BN S3	75	59	141.1	140.0	-0.8%	92.3	102.3	10.8%*
BN XO	86	62	158.0	146.3	-7.4%*	101.3	103.3	1.9%
1st BN XO	46	46	155.3	144.1	-7.2%*	94.8	102.2	7.2%
Prior BQ XO	40	16	161.1	152.7	-5.5%	108.7	106.6	-2.0%
BDE S3	21	23	149.8	151.2	0.9%	101.5	116.3	14.6%*
1st BDE S3	6	5	146.2	152.8	4.3%	93.3	108.8	16.6%*
Prior BQ S3	15	18	151.3	150.8	-0.3%	104.8	118.3	12.9%*
BDE XO	20	17	190.9	163.9	-14.1%*	117.2	120.4	2.7%
BN CDR	44	32	208.7	195.1	-6.5%*	135.2	148.1	9.5%*
BDE CDR	12	11	225.9	232.2	2.7%	130.9	175.9	34.4%*

NOTES: All 1990 and 1998 values, with the exception of Ns, are in months. Statistically significant ($p < 0.1$) differences are marked with bold type and an asterisk. Overall averages are not split out into first-time and repeat position holders when these groups represent less than 20 percent of the total officers in that type of assignment.

Table C.1—extended

Total TDA			Total Leadership			Total Staff		
1990	1998	%Δ	1990	1998	%Δ	1990	1998	%Δ
0.3	0.7	133.3%*	18.3	16.4	-10.4%*	1.7	2.4	41.2%*
0.3	0.6	100.0%*	12.7	11.4	-10.2%*	0.6	1.5	150.0%*
0.4	0.7	75.0%*	23.7	22.0	-7.2%*	2.6	3.4	30.8%*
6.2	5.5	-12.7%	40.2	43.4	8.0%*	35.1	35.7	1.7%
5.6	4.1	-36.6%	35.6	39.9	12.1%*	34.3	34.6	0.9%
7.5	8.3	9.6%	50.7	50.8	0.2%	37.0	38.1	2.9%
48.8	36.7	-24.8%*	47.0	50.8	7.5%	94.1	89.2	-5.5%
56.7	43.0	-24.2%*	45.0	46.1	2.4%	113.0	100.2	-11.3%*
60.5	41.9	-30.7%*	44.2	46.0	3.9%	111.1	98.1	-11.7%*
52.4	46.1	-13.7%	45.9	46.3	0.9%	115.2	106.3	-8.4%
48.3	35.0	-27.5%*	46.1	51.0	9.6%	103.7	100.2	-3.5%
52.8	44.0	-16.7%	43.3	47.2	8.3%	102.8	105.6	2.7%
46.5	32.4	-30.3%*	47.2	52.1	9.4%	104.1	98.7	-5.5%
73.7	43.5	-41.0%*	43.4	50.7	14.4%	147.5	113.2	-30.3%
73.5	46.9	-36.2%*	67.4	76.7	13.8%*	141.3	118.4	-16.2%*
95.0	55.3	-41.8%*	79.9	82.0	2.6%	146.0	149.2	2.1%

Table C.2
Career Histories of Time Spent in Assignments (Armor Officers)

	N		Total Time			Total TOE		
	1990	1998	1990	1998	%Δ	1990	1998	%Δ
PLT LDR	574	425	19.3	20.5	5.9%	18.7	19.1	2.1%
1st PLT LDR	321	241	14.6	14.8	1.4%	14.2	14.0	-1.4%
2nd PLT LDR	253	184	25.2	27.0	7.1%*	24.5	25.8	5.0%
CO CDR	326	161	77.8	79.1	1.6%	71.4	74.3	4.1%*
1st CO CDR	246	112	74.0	75.5	2.0%	68.9	71.3	3.4%
2nd CO CDR	80	49	89.3	87.2	-2.4%	79.2	81.2	2.5%
BN S3	48	36	143.3	140.7	-1.8%	93.7	98.0	4.4%
BN XO	65	39	155.8	154.2	-1.0%	104.6	103.4	-1.2%
1st BN XO	31	32	155.4	153.7	-1.1%	99.4	100.8	1.4%
Prior BQ XO	34	7	156.2	156.9	0.4%	109.3	115.4	5.3%
BDE S3	15	10	152.3	145.3	-4.8%	105.3	105.6	0.3%
BDE XO	13	10	192.5	168.3	-12.6%*	121.5	113.3	-7.2%
BN CDR	46	14	204.7	198.4	-3.2%	126.5	148.6	17.5%*
BDE CDR	5	7	235.0	226.4	-3.8%	144.2	154.3	6.5%

NOTES: All 1990 and 1998 values, with the exception of Ns, are in months. Statistically significant ($p < 0.1$) differences are marked with bold type and an asterisk. Overall averages are not split out into first-time and repeat position holders when these groups represent less than 20 percent of the total officers in that type of assignment.

Table C.2—extended

Total TDA			Total Leadership			Total Staff		
1990	1998	%Δ	1990	1998	%Δ	1990	1998	%Δ
0.6	0.9	50.0%*	17.9	17.0	-5.3%	1.4	3.0	114.3%*
0.4	0.7	42.9%	13.8	12.3	-10.9%*	0.8	2.5	212.5%*
0.8	1.2	33.3%	23.2	23.3	0.4%	2.0	3.7	85.0%*
6.4	4.7	-36.2%	38.7	42.0	8.5%*	0.9	1.1	18.2%
5.1	4.2	-21.4%	35.0	37.8	8.0%*	39.0	37.7	-3.4%
10.1	5.9	-71.2%	50.1	51.6	2.9%	39.2	35.5	-10.4%
49.7	42.7	-16.4%	40.9	42.9	4.7%	102.4	97.7	-4.8%
51.2	50.8	-0.8%	42.2	44.4	5.0%	113.6	109.8	-3.5%
56.0	52.9	-5.9%	42.3	45.3	6.6%	113.1	108.3	-4.4%
46.9	41.4	-13.3%	42.2	40.3	-4.7%	114.0	116.6	2.2%
47.0	39.7	-18.4%	39.1	42.0	6.9%	113.2	103.3	-9.6%
71.0	55.0	-29.1%	44.8	38.3	-17.0%	147.7	130.0	-13.6%
78.2	49.8	-36.3%*	61.6	64.6	4.6%	143.1	133.7	-7.0%
90.8	72.1	-25.9%	89.8	81.3	-10.5%	145.2	142.0	-2.3%

Table C.3
Career Histories of Time Spent in Leadership Assignments
(Infantry Officers)

	Total PLT LDR Time			Total CO CMD Time		
	1990	1998	%Δ	1990	1998	%Δ
PLT LDR	18.3	16.4	-10.4%*			
1st PLT LDR	12.7	11.4	-10.2%*			
2nd PLT LDR	23.7	22.0	-7.2%*			
CO CDR	20.0	23.3	16.5%*	20.3	20.1	-1.0%
1st CO CDR	19.9	23.1	16.1%*	15.7	16.8	7.0%*
2nd CO CDR	20.0	23.8	19.0%*	30.7	27.0	12.1%*
BN S3	22.2	22.6	1.8%	24.8	28.2	13.7%*
BN XO	21.1	19.0	-11.1%	23.9	27.1	13.4%*
1st BN XO	20.5	19.0	-17.9%	23.7	27.0	12.2%
Prior BQ XO	21.7	19.0	-14.2%	24.3	27.4	11.3%
BDE S3	23.8	21.7	-9.7%	22.3	29.3	31.4%*
1st BDE S3	23.8	20.0	-19.0%	19.5	27.2	28.3%
Prior BQ S3	23.7	22.1	-7.2%	23.5	29.9	27.2%*
BDE XO	14.3	17.8	19.7%	27.6	31.4	12.1%
BN CDR	11.3	20.0	77.0%*	28.8	29.8	3.4%
BDE CDR	4.8	12.1	152.1%*	20.7	19.8	-4.5%

Table C.3—extended

Total BN CMD Time			Total BDE CMD Time			Total BQ Time		
1990	1998	%Δ	1990	1998	%Δ	1990	1998	%Δ
						15.9	13.7	-13.8%*
						21.2	15.3	-27.8%*
						14.5	12.9	-11.0%*
						28.8	22.3	-22.6%*
						25.2	23.1	-9.1%
						14.3	17.0	15.9%
						29.6	24.8	-16.2%*
						32.0	27.2	-15.0%*
27.3	26.9	-1.5%				20.2	30.3	50.0%*
30.8	25.5	-20.8%	23.7	24.5	3.3%	20.1	31.4	56.2%*

Table C.4

Career Histories of Time Spent in Leadership Assignments (Armor Officers)

	Total PLT LDR Time			Total CO CMD Time		
	1990	1998	%Δ	1990	1998	%Δ
PLT LDR	17.9	17.0	-5.3%			
1st PLT LDR	13.8	12.3	-10.9%*			
2nd PLT LDR	23.2	23.3	0.4%			
CO CDR	18.7	23.3	24.6%*	20.0	19.7	-1.5%
1st CO CDR	18.8	21.8	16.0%*	16.2	15.9	-1.5%
2nd CO CDR	18.4	23.4	27.2%*	30.7	28.3	-7.8%*
BN S3	18.3	18.4	0.06%	22.7	24.6	7.7%
BN XO	16.4	18.4	11.9%	25.9	26.0	0.4%
1st BN XO	16.8	19.3	13.0%	25.5	26.0	1.9%
Prior BQ XO	15.9	14.6	-8.9%	26.3	25.7	-2.3%
BDE S3	15.1	16.8	11.1%	24.0	25.2	4.8%
1st BDE S3	0.0	21.5	*	25.5	20.5	-24.4%
Prior BQ S3	17.4	15.6	-11.2%	23.8	26.4	9.8%
BDE XO	13.5	16.0	15.6%	29.3	22.3	-31.4%
BN CDR	12.7	12.9	1.6%	24.0	26.8	10.4%
BDE CDR	6.2	13.4	216.1%	22.6	21.3	-6.1%

Table C.4—extended

Total BN CMD Time			Total BDE CMD Time			Total BQ Time		
1990	1998	%Δ	1990	1998	%Δ	1990	1998	%Δ
						15.2	13.0	-16.9%
						22.8	15.9	-30.3%*
						16.1	13.5	-16.1%*
						28.9	27.0	-7.0%
						24.3	23.0	-5.7%
						9.0	8.5	-5.9%
						26.7	26.6	-0.4%
						34.9	31.0	-12.6%
24.9	24.9	0.0%				23.4	26.1	10.3%
37.4	22.0	-70.0%	23.6	24.6	4.1%	26.2	32.7	19.9%

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OVER THE PAST DECADE, the U.S. Army has been profoundly affected by changes in military missions, repositioning and reduction of forces, and a heightened pace of deployments. Have these changes, coupled with normal personnel movements through units, limited the opportunities for Army combat leaders to develop tactical skills?

This document explores whether between 1990 and 1998 the tenure of key developmental assignments for infantry and armor officers became shorter; whether the tactical training during those assignments declined significantly; and whether earlier shifts in career patterns and training meant that recent officers arrived in key positions with less experience than earlier generations of officers.

